



Additional Chart Coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 2 — CHART INFORMATION

SECTOR 2

NORTH COAST OF BRAZIL—PONTA CURUCA TO PONTA DE SANTO ANTONIO

Plan.—This sector describes the N coast of Brazil from Ponta Curuca to Cabo Calcanhar and the NE coast from Cabo Calcanhar to Ponta De Santo Antonio. The N coast sequence is from W to E and the NE coast sequence is from N to S.

Penedos de Sao Pedro e Sao Paulo, Arquipelago de Fernando de Noronha, and Atol das Rocas are also described in this sector and in the above order.

General Remarks

2.1 Winds—Weather.—Along the stretch of coast NE of Salvador the direction of trade winds varies an average of 045° during the contrary monsoons. They are E during the months of February, March, and October and ENE during November and December. From April to September they are ESE.

Other winds and weather of a local nature are discussed in sequence along with related geographical features.

The year has two seasons, the rainy season and the dry season. The rainy season is between January and May. The dry season is between June and December.

The prevailing winds are from the NE.

Weak and short-lived winds blow from the S and W during the rainy season.

At times there are heavy rains from the NW and SW during February, March and April.

In the dry season, winds are from the ENE. At times there are fresh N winds during the day which weaken at night. There is some rain even during the dry season.

In the afternoon there is a sea breeze and at night there is a land breeze.

The coast from Ponta Curuca to Ilha de Santana, about 275 miles ESE, is low, formed by sandhills 45 to 75m high, and indented heavily with bights.

The indentations are so numerous along this stretch of the coast that they may be difficult to distinguish from one another.

The coast consists of several sandhills which are also similar in appearance and which are interspersed with reddish cliffs and clumps of mangroves.

This part of the coast is imperfectly surveyed and should be approached with caution and not within the 20m curve.

Several rivers flow into the sea along this section of the coast. The silt carried out by these rivers forms shoals which extend, in places, as far as 20 miles from their mouths.

These shoals, taking the name of what ever geographic feature is closest, form an extensive coastal bank along this entire coast. Constant soundings should be taken when in this vicinity.

Tides—Currents.—The tidal currents off the whole of this coast are very regular with their rates increasing progressively to the W. The current in both directions follows the trend of the coast, and are stronger close inshore and in shallow water, but in general their influence is not felt more than 6 to 8 miles offshore.

In the vicinity of **Cabo Calcanhar** (5°10'S., 35°29'W.), the rate of the current never exceeds 1 knot, but between Ilhas de Sao Joao and Ilha de Santana, there are usually rates from 2 to 3 knots, and on a few occasions 4 to 5 knots.

Off the coast between Ponta da Atalaia and Ilhas de Sao Joao, the tidal currents are sometimes felt as much as 20 miles offshore. The SW current generally runs SW near the coast and WSW or W some distance from it. Near the land, it has a mean rate of 2.5 knots at springs and 1.75 knots at neaps, but the rate diminishes as the distance offshore increases. The NE current runs ENE close inshore at a rate of 1.75 knots at springs and 1 knot at neaps, and trends N with diminishing strength in proportion to the distance offshore.

The difference between the rate of the SW current and that of the NE current is the result of a general set W from 18 to 24 miles a day during the greater part of the year, but during the months of March, April, and May, the set may sometimes be E at the same rate.

Caution.—The coastal bank contains most dangers along this part of the coast. However, depths of less than 18.3m are charted outside the 20m curve.

The 20m curve lies as far as 13 miles offshore except between Ilhas de Sao Joao and Ilha Mangunca where it lies as far as about 32 miles. The following is a list of the major dangers along this part of the coast.

Banco Hylas (0°18'S., 47°18'W.) is an extensive shoal with a bottom of rock in places. The middle of the bank lies about 18 miles N of Salinopolis Lighthouse. The minimum depth on the bank is 11.2m.

Banco Buckle (0°17'S., 47°00'W.), with a least depth of 7.5m, is charted about 30 miles NE of Salinopolis Light.

Recife Manoel Luis (0°52'S., 44°16'W.) is a dangerous group of drying rocks, surrounded by shoals, on a bank with depths of less than 10m, lying 48 miles NNE of Ilha Mangunca. The sea breaks over these rocks at LW.

It is almost impossible to see them unless they are passed nearby.

The depths and nature of the bottom near Recife Manoel Luis are so variable that soundings give no indication of nearness to this danger.

Changes in depths and in the position of banks and shoals have been observed for a long period of time along this stretch of the coast, not only close to shore, but also well offshore.

Ponta Curuca to Ilha de Santana

2.2 Ponta Curuca (0°33'S., 47°49'W.) is located on the N extremity of Ilha de Curuca. The point is conspicuous because it is the highest point of land in the area. A light is shown from the W side of Ilha de Cajutuba, about 3 miles ESE of Ponta Curuca.

Ponta do Algodao (0°35'S., 47°35'W.), the N extremity of Ilha do Algodao, from which a light is shown, lies about 13

miles E of Ponta Curuca. The point is distinguished by a small hummock with a notch in it and by its sandy beach and prominent sand dunes. When seen from offshore the point looks like a nipple, and when seen from the E the point looks like an island.

Baia de Salinas is entered between Ilha do Marco and Ponta da Atalaia, about 6 miles to the E. The bay affords shelter to small craft entering on the tide.

The town of Salinópolis is located on a wooded plain on the E side of the bay.

Salinópolis (0°37'S., 47°21'W.) is the base station for Rio Para pilots. The town stands on a red cliff. The land slopes downward to the W of the town to a mass of tall trees.

Vessels approaching the pilot station will first sight the lighthouse, which stands in a town, then four radio towers, and then a white church tower. Deep draft ships approaching the pilot station from the N can anchor with the lighthouse bearing 175°, distant 4.5 miles, in depths of 10 to 14m, mud.

Ponta da Atalaia (0°36'S., 47°19'W.) is located about 3 miles ENE of Salinópolis Lighthouse, and is the most conspicuous and easily recognizable point in the area. It is formed by sandy terrain with marks of red earth. A high lookout mast stands on the point near the ruins of a lighthouse.

When approaching from the E, the point, when initially sighted, gives the impression of being an island. From the same direction, Monte Pirauçu, a small hill lying 8 miles S of the point, can be seen in clear weather rising from the surrounding land.

Ponta da Atalaia to Rio Gurupi

2.3 The coast from Ponta da Atalaia trends ESE for about 43 miles to the N end of Ilha Boiucucanga. This part of the coast is fringed by several islands, between which are bays, formed generally of river estuaries. The entire coast is bordered by a sandbank which extends as far as 4 miles N from the islands.

Ponta Boiucucanga (0°48'S., 46°38'W.) is the NE extremity of the island of the same name. The point is higher and more conspicuous than any in the area. A light is shown 0.3 mile SSE of the point.

Baia do Caete is entered between Ilha Boiucucanga and Ilha Camarauacu, about 13 miles to the ESE. Ilha Camarauacu is surrounded by sandy beaches which are visible at a distance of about 8 miles. Ships drawing up to 2m and with local knowledge can reach the town of Bragança, located on the W bank of Rio Caete, about 10 miles above its mouth.

The coast from Ilha Camarauacu trends ESE for about 25 miles to the estuary of Rio Gurupi.

The entire coast is bordered by a sandbank extending as far as 6 miles N from the islands which fringe it. These islands form several narrow and shallow channels which afford shelter from offshore winds.

Baia do Guaperoba lies between Ilha Camarauacu and Ilha do Apeu, about 10 miles to the E. The SE part of the bay is the deepest, but local knowledge is essential as there are many shoals within the bay.

Rio Gurupi (1°04'S., 46°02'W.), about 389 miles long, flows into Baía do Gurupi, about 10 miles SE of Apeu Light, which is located on Cabo Gurupi. Sandbanks obstruct the estuary and

extend about 8 miles N from the mouth of the river. The river is navigable by small craft, with local knowledge and at high water, as far as Viseu, located about 20 miles above its mouth. During the rainy season, small craft can ascend the river to its source.

Rio Gurupi to Ponta Itacolmi

2.4 The coast from the estuary of Rio Gurupi trends ESE for about 70 miles to Ilhas de São João. Sandbanks, which break during onshore winds, extend as far as 10 miles N from the islands which fringe this part of the coast. These islands form sheltered channels for small craft but should only be approached with local knowledge.

Monte Piracoaua, small but prominent as it is the only hill along this stretch of the coast, stands about 36 miles SE of the light on Cabo Gurupi.

Tides off this section of the coast are semi-diurnal. They have great amplitude and can reach 7m during the spring tides close to the equinoxes.

During January, February, July, and August, the current is from the W with a rate of 1.6 to 2 knots. During the rest of the year the current is from the WNW with a rate of 1 to 2 knots.

Baía de Turiacu (1°30'S., 45°15'W.) forms the estuary of several small rivers and is encumbered with sandbanks. A narrow and sinuous channel that has frequent variations gives access to the town of Turiacu, on the W bank of Rio Turiacu.

The channel is very dangerous and can only be entered by small vessels with local knowledge.

Ilhas de São João (1°19'S., 44°56'W.) consists of a group of seven low islands, separated from each other by narrow channels, and located about 18 miles NE of Baía de Turiacu.

Ilha Maíau, the N most and largest of the group, is covered with sand dunes and shows a light on its N side. Ilha dos Lençois is the E most of the group and consists solely of white sand dunes. The other islands of the group are Ilha do Guara, Ilha Urumarú, Ilha Mirinzal, Ilha do Porto do Meio, and Ilha Aracaja. There are numerous drying sandbanks between the islands and the coast. Depths of less than 10m extend up to 12 miles NE of Ilha Maíau and Ilha Lençois.

Anchorage.—Anchorage, sheltered from all except E winds, may be obtained by ships with a draft of up to 5m in fine sand in the bay SE of the islands, close S of the SW point of Ilha Lençois. The bay is obstructed by sandbanks beyond this anchorage. The tidal current in the anchorage runs ENE and WSW at rates of up to 3 knots, changing direction at HW and LW.

The coast from Ilhas de São João trends SE for about 60 miles to Ponta Itacolmi. Several shoals lie within and near the 32m curve along this part of the coast. The coastline is fringed by several islands, between which are bays, formed generally of river estuaries. Drying sandbanks, marked by breakers around the edges, lie up to 10 miles off the coast.

Ilha Mangunça (1°36'S., 44°39'W.) is located about 24 miles SE of Ilha Lençois. The island is wooded and shows a light from its E side. Close W of its S point, there is anchorage, sheltered from all winds, in depths of about 8m, sand, accessible to vessels with local knowledge.

Ponta de Itacolmi (2°09'S., 44°28'W.) is formed by high reddish cliffs covered with scrub. Morro Itacolmi rises to an

elevation of 72m, 1.5 miles SE of the point, and is visible up to 20 miles in clear weather.

Ponta Pirajuba (2°13'S., 44°24'W.) is a rocky steep point with red cliffs that are visible a good distance offshore. A light is shown from the point, 5 miles SE of Ponta Itacolomi.

Baia de Sao Marcos

2.5 Baia de Sao Marcos (2°21'S., 44°17'W.) is entered between Ponta Itacolomi and the NE extremity of Ilha do Maranhao (Ilha de Sao Luis). This bay is the deepest of all along the N coast of Brazil. The bay is much encumbered by sandbanks, through which, however, there are channels which can be used by deep draft vessels.

Winds—Weather.—The year has two seasons, the rainy season and dry season. The rainy season is January to May and the dry season from June to December.

Visibility is usually good in the bay. The occurrence of fog is very rare; however, some mist may occur, which rings a slight reduction in visibility.

Heavy, but short, rainstorms are common during the rainy season.

The predominant wind is from the E most of the year, with the exception of January and April (from N), March and October (from SE), and August (from SW). The average wind force in this area is 2 to 5 on the Beaufort scale.

Tides—Currents.—In Baia de Sao Marcos the current is quite strong and can reach 6 knots between the banks. The maximum tidal velocities occur 3 to 4 hours after HW and 2 to 3 hours after LW.

Strong eddies provoked by tidal currents are observed NE of Banco dos Almas and close to the port of Itaqui.

2.6 Ponta Pirarema (8°20'S., 44°22'W.) is located about 12 miles SSE of Ponta Itacolomi and consists of high red cliffs.

On the cliffs S of the point is a very remarkable red patch which is most visible from seaward when bearing more than 270°. A drying reef extends 0.5 mile NE from the point.

Ponta de Sao Raimundo lies 3.5 miles SSW of Ponta Pirarema and Ponta Tatinga lies 1.5 miles farther SW. Between these two points there is a very conspicuous white sandal. Also conspicuous is a small hill on Ponta Tatinga.

Alcantara, built on a hill, is situated about 1.7 miles W of Ponta Tatinga and a light is shown close S of Alcantara.

2.7 Morro Aracagi (2°27'N., 44°09'W.), 51m high, rises on the N side of Ilha de Sao Luis and is the first land sighted when approaching from the NE. A light is shown from the W side of Morro Aracagi.

Ponta de Sao Marcos (2°29'S., 44°18'W.), about 9 miles WSW of Morro Aracagi, marks a sharp turn of the shore at the NW extremity of Ilha de Sao Luis. Extensive shoals extend NE of the point to a distance of almost 4 miles. A light is shown from a conspicuous fort which stands on the point. A dangerous wreck lies about 0.7 mile WNW of the point.

Ponta da Areia, low and sandy, lies about 2 miles SW of Ponta de Sao Marcos. The point is fronted by a sandbank with depths of less than 1.8m which lies up to 1.3 miles offshore.

Ilha do Medo lies about 3 miles WSW of Ponta da Areia. Rocks, above and below-water, extend about 0.6 mile NE of

the island. Canal do Boqueirao lies between the S side of Ilha do Medo and the shoals which extend from Ilha de Sao Luis.

The canal should not be attempted without a pilot. A light is shown from the island.

2.8 Ponta da Madeira (2°34'S., 44°23'W.), the W extremity of Ilha de Sao Luis, lies about 3 miles SSW of the S side of Ilha do Medo. A disused lighthouse stands on the point.

Ponta da Madeira Iron Ore Terminal (2°34'S., 44°23'W.) is situated at the end of Ponta da Madeira.

A berthing quay, lying N to S and about 250m long, with 3 dolphins at each end, is connected to the shore by a jetty.

It is protected by two stone breakwaters which project, respectively, 1,050m NW and 312m from the shore at either end of the berth. A light is shown from the end of each breakwater.

There is a minimum depth of 23m alongside at the quay, which is designed to accommodate vessels up 365,000 dwt with a draft of 21.5m.

The breakwaters are designed to divert the tidal currents to run parallel to the quay at a maximum speed of 3 knots, which is the limiting condition for berthing vessels over 100,000 dwt.

Mooring maneuvers should be carried out against the current.

Pilotage.—Pilotage is compulsory and reported available 24 hours. Send ETA 15 days (or on leaving previous port if nearer) and 8 days including the following: dwt in tropical waters, LOA, beam, maximum draft in tropical waters, arrival draft and expected departure draft, cargo plan and loading sequence, air draft, deballasting time, water requirements, gas free condition, details of mooring lines, and Master's name.

Also send message 48 hours in advance (with request for pilot and anchorage instructions) and 24 hours (with gas free condition and any amendments to previous messages) in advance through Sao Luis (PPB). 4 hours in advance of ETA contact the terminal on VHF and confirm request for pilotage.

Pilots are reported to board, as follows:

1. Vessels with a draft of 11m or less—about 3 miles WNW of Ponta do Sao Marcos Light.
2. Vessels with a draft of over 11m—0.5 mile N of lighted buoys Nos. 17 and 22.

Directions.—With Morro Itacolomi bearing 270°, distance about 17 miles or Pirajuba light bearing 257°, distance 14 miles, Morro Aracagi light will bear about 175°.

Steer a course of 212° to pass between Banco do Meio and Banco das Almas in depths of 25 to 35m. This channel is most frequently used for entering Baia de Sao Marcos and is laid down on the area chart.

Vessels bound for Porto de Itaqui continue on the 212° course until Isla do Medo light bears 139°, then change course to 180° which leads to the anchorage and pilot boarding area W of Ponta da Madeira.

The channel E of Banco do Meio is not recommended and should not be attempted for entering Baia de Sao Marcos.

Caution.—All along Baia de Sao Marcos there are strong ebb and flood tidal currents. These currents, which may reach 6 knots, have been causing the loss of anchors of anchored vessels, therefore, creating great risk of running aground on the innumerable sand banks and shoals which exist in the bay.

Banco das Almas, an extensive shoal with depths of 3.6 to 9.1m, sand and shells, lies with its N extremity about 12 miles E of Ponta de Itacolomi. A 11m patch lies about 2 miles E of the NE extremity of Banco das Almas.

Banco do Meio, a bank of fine sand 13 miles long, with depths of less than 10m, lies in the middle of Baía de do Maranhão, about 10 miles NW of Ilha de São Luís. The NW edge is steep-to and should be given a wide berth.

A dangerous wreck lies on the SW end of the bank. The bank, which has a least depth of 2.1m, breaks at LW.

Ships should not approach Baía de São Marcos between Banco do Meio and the N side of Ilha de São Luís as several unmarked shoals lie within this area.

Banco da Cerca, a sandbank 4 miles long, lies about 2.2 miles NW of Ponta da Areia. It has a least known depth of 0.2m located near the middle of the shoal, but there are reports that rocky heads exist elsewhere on the bank.

The sea is reported to break over the whole length of this shoal at LW. The tidal currents near the shoal attains a rate of 5 knots at times.

Banco de São Marcos, a sandbank that uncovers at LW, lies from 1 to 3.5 miles NE of Ponta de São Marcos.

Banco das Almas and Banco do Meio are reported to be extending to the NE. Several reefs and shoals lie between Banco de Cerca and Ilha do Medo.

Pedra do Severino, 1.3 miles NNE of Ilha do Medo Light, has a depth of 2.4m. Extensive shoals with rocks extend up to 1.5 miles NE of Ilha do Medo with a minimum depth of 1.4m.

A sunken wreck, marked by a light, lies 2.5 miles W of Ilha do Medo. Cabeco Mearim, an extensive shoal with rocks, lies 0.75 mile SSW of the point of Ilha do Medo. The shoal has a depth of 4.4m and is marked by a buoy.

The NE edge of a shoal with a least depth of 2.5m lies about 3.2 miles SW of the light on Ilha do Medo.

Ilha de Guarapira, marked by a light, lies just over 0.5 mile SSE of Ponta da Madeira Light. It lies on a rocky shoal with depths of 3.4 to 10m. The NNW, NE, and SE ends are marked by lighted buoys. A depth of 7.7m lies just over 0.5 mile WSW of Ilha de Guarapira light.

2.9 São Luís (2°32'S., 44°17'W.) ([World Port Index No. 12590](#)) has silted up and has ceased to be important as a port after the construction of the port of Itaqui.

The port of São Luís is used mainly by fishing boats and pleasure craft. The port has a few piers that allows mooring, but only at flood tide, to ships of 2.5 to 3.5m draft. The quarantine anchorage is WNW of Ponta da Areia.

2.10 Itaqui (2°34'S., 44°22'W.) ([World Port Index No. 12585](#)) is located about 6 miles WSW of São Luís. The wharf at Itaqui is 720m long, with alongside depths of 7 to 11m. In addition there are three tanker berths, the largest with depths alongside to 11m.

Cargo vessels may moor day or night, depending on the tide; however, vessels with a draft greater than 7m may maneuver only at or near slack water. Vessels that are bound for the oil berths may only berth on the rising tide during the day. Berthing should commence one hour before HW.

The wharf at Itaqui is to be extended to 1,068m with depths up to 12m.

Pilotage.—Pilotage is compulsory and should be arranged through the agent giving 24, 12, and 6 hours notice of ETA.

See Ponta da Madeira Iron Ore Terminal for pilot boarding locations.

Anchorage.—There are three designated outer anchorage areas. Anchorage No. 1 is for partially loaded vessels bound for Ponta da Madeira Terminal, with drafts greater than 11m and/or over 100,000 grt; vessels in litigation; or vessels over 80,000 grt with a draft greater than 11m awaiting major repairs. Anchorage No. 2 and Anchorage No. 3 are for vessels with drafts over 20m awaiting the tide.

Caution should be exercised due to the possible existence of submarine cables W of this area.

There are five anchorage areas, designated No. 4 to No. 8, in Baía de São Marcos. Anchorage No. 7 is for vessels of less than 80,000 dwt or 11m draft. Anchorage No. 8 is for vessels with a draft of less than 11m when in quarantine or when loading or unloading combustibles and explosives; permission must be obtained from the Captain of the Port before using this anchorage.

2.11 Porto da Alumar (2°40'S., 44°22'W.) is a new bulk terminal located about 0.5 miles S of Itaqui.

The approach channel is entered 3 miles S of Itaqui. It leads SSE for 1.2 miles and then S for 1.8 miles until it reaches a turning area off the wharf. The channel and the turning area are dredged to 7m. Range lights lead through the channel entrance. The channel limits are marked by lighted buoys.

The wharf is 251m long and has depths alongside of about 13m. Vessels with a maximum length of 225m and a beam of 32.3m can be accommodated.

The wharf is equipped for loading aluminum and for unloading bulk cargo such as bauxite and coal.

Pilotage.—Pilotage is compulsory. Pilots are picked up in the same places as the pilots for the Ponta da Madeira Iron Ore Terminal.

The ETA should be given 15 days in advance, or on departure from a previous port, and confirmed 5 days, 48 hours, and 4 hours before arrival.

The vessel's draft and cargo requirements should be signaled 48 hours before arrival.

Anchorage instructions are requested 4 hours in advance.

Anchorage Area D (2°38.0'S., 44°22.7'W.) can be used by a single vessel waiting to berth at Porto da Alumar.

Caution.—It has been reported (1994) that the banks and drying banks on the W side of the channel in the approaches to Porto da Alumar are extending E into the channel.

Baía de São Jo Se

2.12 This bay, encumbered almost entirely by sandbanks, occupies the E part of Baía do Maranhão. The entrance to the bay is obstructed by Coroa Grande.

Coroa Grande, an extensive shoal consisting of several ridges with depths of less than 1.8m in places, extends about 18 miles NE and 11 miles N from the NE extremity of Ilha de São do Maranhão.

The sea occasionally breaks over some of the ridges at LW. Coroa Grande was reported to be extending to the N and should be given a wide berth.

Ilha de Santana to Tutoia

2.13 Ilha de Santana (2°14'S., 43°41'W.) is low and covered with mangroves. The island is surrounded by reefs on which the sea breaks but the breakers are seldom seen until the land is well in sight. A light is shown from the NE side.

Between the NE point of Ilha de Santana and Ponta dos Mangues Secos, 12 miles to the SE, there is an extensive bay known as Baía do Tubarão.

The entrance to the bay is obstructed by Banco Imperial (Recifes de Santana), which are largely unsurveyed.

Depths are reported uneven for about 13 miles N of Banco Imperial. There are numerous banks in the area with depths of less than 20m. The shallowest, with a depth of 11.8m, lies 11.5 miles NNE of Isla de Santana light. There is also a 9.8m patch 13.5 miles ENE of the light.

There is a spacious and secure anchorage in depths from 9 to 13m, 2 miles W of Ponta dos Mangues Secos. The best approach to this anchorage is by way of a somewhat intricate channel which passes 1 mile SE of Banco Cesar and then 1 mile N and 2 miles W of Ponta dos Mangues Secos.

The channel has a minimum depth of 6m but local knowledge is essential. Tidal currents in this channel can attain a speed of 3 to 4 knots.

2.14 Ponta dos Mangues Verdes (2°20'S., 43°18'W.) is covered with vegetation and lies 8 miles E of Ponta dos Mangues Secos. Prominent white sand dunes, extending to the E, begin at this point. From this point to Tutoia, 65 miles to the ESE, the coast is fringed by banks and reefs, with depths of less than 10m, to distances up to 9 miles offshore.

As far as the mouth of Rio das Preguicas, depths of over 20m are to be found 18 miles offshore, but then to Tutoia there are several banks with depths from 16.7 to 19.3m lying up to 25 miles offshore. The banks and reefs in this area can best be seen on the area chart.

Rio das Preguicas is located about 40 miles ESE of Ponta dos Mangues Verdes.

A light is reported to be shown from the W side of the mouth of the river. The river is entered by a winding channel between two sandbanks, which extends up to 1.5 miles off the river entrance and on which the sea breaks. At HWS vessels drawing up to 4.5m can enter the river and reach the inner anchorage.

Anchorage.—The outer anchorage, situated about 4 miles N of the light, has depths of 7m, sand and mud, good holding ground. The inner anchorage, located ENE of the light, has depths of 5.5m, mud. Local pilots are available to assist ships between the outer and inner anchorage.

Between the mouth of Rio das Preguicas and Barra de Tutoia, the entrance of the W branch of Rio Parnaíba, about 28 miles to the ESE, the coast consists of white sandhills and clumps of trees. Mato de São Cosme, lying about 11 miles SE of the mouth of Rio das Preguicas, is the most prominent of these clumps, and visible for about 13 miles offshore. Tutoia light situated about 11 miles E of Mato de São Cosme.

2.15 Tutoia (2°47'S., 42°17'W.) ([World Port Index No. 12600](#)) consists of an anchorage, sheltered from seaward by sandbanks, where ships of medium draft load and unload from

lighters. The port lies on the N side of Rio Comum and W of the lighthouse on Ponta do Andreza.

Winds—Weather.—The port of Tutoia is exceptionally well sheltered from the prevailing winds in the area, which are almost always from the E.

Tides—Currents.—The mean tidal range is 2.9m at springs and 1.5m at neaps. The currents across the bar attain rates up to 4 knots and set NE during the ebb tide and SW during the flood tide.

Depths—Limitations.—There are three entrance channels to the river. Canal das Gaivotas is the W channel and Canal Velho is the center channel. The E channel is unnamed. The depths in these channels vary and whichever one has the best depths in it is used.

The channel is buoyed in accordance with the IALA Maritime Buoyage System (Region B); due to the frequent changes the position of the channel buoys are not charted and local knowledge is essential. The approach to Canal das Gaivotas is marked by a lighted buoy.

Pilotage.—Pilotage is compulsory and indispensable for safe navigation due to the frequent changes of the shoals, depths, and direction of the channels.

Pilots board ships near Tutoia Lighted Buoy. Pilots should have at least 12 hours advance notice. Ships will not be taken in or out at night.

Anchorage.—Ships awaiting a pilot may anchor in 10m, about 6 miles NE of Barra de Tutoia Light.

The usual anchorage is in 10.9 to 14.0m, about 1.2 miles NNE of Ponta da Andreza Light.

Vessels can anchor in 5.5 to 7.5m, about 1 mile N of the N extremity of Ilha Coroata, about 2 miles ENE of Ponta da Andreza Light.

A least depth of 4.9m lies on the inner bar N of this anchorage.

Rio Parnaíba—Delta

2.16 This river rises in Serra de Tabatinga, about 450 miles inland. It flows into the sea through three main tributaries, Rio Santa Rosa, Rio Canarias, and Rio Igaracu.

These tributaries again divide into several others of less importance. The mouths of these tributaries form a delta which extends from Barra de Tutoia to Ponta Atalaia, 40 miles E.

The delta, low and wooded, has a uniform appearance, except for some sandhills, when seen from the offing. Outside the delta, the water is muddy and the bottom is composed of sand and ooze.

Ships should approach this part of the coast with caution due to the uniform aspect of the land, the heavy sea, the prevailing strong westerly current, and the dense fogs which often occur in this vicinity.

The ports of Tutoia, Luis Correia, and Parnaíba have the only river entrances of any navigational importance, as the other entrances are obstructed by sandbanks.

The greater part of the delta is fringed by a chain of reefs which extend about 2 miles from the shore. Off Ponta da Pedra do Sal, about 35 miles E of Barra de Tutoia, part of this chain dries forming a group of rocks named Recifes da Pedra do Sal. These rocks are about 1 to 2m high. A 10.3m patch lies 9 miles NNE of Ponta da Pedra do Sal.

A wreck lies stranded on Barra das Canarias, about 7 miles NW of Ponta da Pedra do Sol and a dangerous wreck has been reported to lie about 22 miles NNE of Barra de Tutoia.

A light is shown from Ponta da Pedra do Sol. An aeronautical radiobeacon is located about 6 miles S of Ponta da Pedra do Sol Light.

A light is shown from the W entrance point of Rio das Canarias.

2.17 Rio Igaracu (2°52'S., 41°40'W.), the E most tributary of Rio Parnaiba, flows in a NE direction for about 17 miles and forms Barra do Igaracu at its mouth.

The river is entered about 6 miles SE of Ponta da Pedra do Sal lighthouse. A channel leads to the harbor between a detached mole extending NNE and the long arm of an L-shaped breakwater to the E, projecting 1.5 miles NNE from **Ponta da Atalaia** (2°52'S., 41°39'W.), the S entrance point of the harbor. Berths on the W side of the breakwater, 0.4 mile SW of its elbow, were under construction. The least depth in the channel is 0.3m.

Luis Correia (2°53'S., 41°40'W.) is a city located on the SE side of Rio Igaracu. Pilotage is compulsory. All cargo is worked from lighters at the anchorage which is in front of the city in depths from 2 to 4m.

From August to December the winds usually are strong, which makes the entrance difficult, and sometimes makes the bar impassable.

Tidal currents attain rates from 4 to 5 knots over the bar. Outside the bar the outgoing tide sets N.

Pedras Malhadinhas are two rocky shoals with depths of less than 5.5m and a minimum depth of 5.2m which lies 2 to 2.5 miles N of Ponta da Atalaia. A similar group with a minimum depth of 5.4m lies about 3.7 miles NNW of the same point.

An isolated shoal with a depth of 4.6m lies midway between these two groups.

Parnaiba (2°54'S., 41°47'W.) ([World Port Index No. 12620](#)) is located on the SE side of Rio Igaracu, 10 miles above its mouth. The port has a wharf with a depth of 1.1 alongside.

Small craft and lighters move cargo from the port to Tutoia and Luis Correia for overseas export.

Luis Correia to Camocim

2.18 The coast trends E from Luis Correia for about 48 miles to Ponta do Trapia, the W entrance point of the bay at the mouth of the Rio Coreau. The coast is low and sandy with scattered inland patches of vegetation. This part of the coast is fringed with sandbanks and reefs.

A light is shown from Ponta de Itaque, 6 miles E of Ponta da Atalaia.

Several small rivers flow into the sea along this stretch of the coast, with Rio Coreau the only one of importance to shipping.

Ponta das Almas (2°54'S., 41°16'W.) lies 24 miles E of Luis Correia and shows a light. The mouth of the Rio Timonha lies immediately S of Ponta das Almas and is encumbered by sandbanks. Small vessels can anchor within the sandbanks in depths of 5 to 7m, good holding ground.

Banco do Mergulho (2°36'S., 41°22'W.), a bank of coral with a depth of 7.2m, lies 19 miles NNW of Ponta das Almas

light. A detached 9.4m patch lies 6 miles WNW of the shallowest part of the bank. A 15.7m patch lies 30 miles NNW of the light and between it and Banco do Mergulho there are depths of less than 15m.

Pedra Tourao, a rock with a depth of 1.2m, lies 3.5 miles offshore and 8 miles ENE of Ponta das Almas light.

2.19 Camocim (2°54'S., 40°50'W.) ([World Port Index No. 12630](#)), 28 miles W of Ponta das Almas, lies on the W bank of the mouth of Rio Coreau. The flood and ebb currents over the bar average about 3 knots.

The approach to the river mouth is encumbered by sandbanks through which there is a channel navigable by vessels of 4m at HW. A lighted buoy marks the approach to the channel leading into the river. The buoy is moored about 2 miles NE of the light on Ponta do Trapia.

From June to December, strong winds from between ENE and ESE raise a heavy sea on the bar, occasionally rendering it impassable.

At neaps, the limiting vessel dimensions are a length of 75m, a beam of 15m, and a draft of 4m.

At springs, the limiting vessel dimensions are a length of 100m, a beam of 15m, and draft of 4.5m.

Pilotage.—Pilotage is compulsory and necessary due to the shifting of the sandbanks. A pilot, which must be requested 24 hours in advance, boards in the vicinity of Camocim Entrance Lighted Buoy. Vessels awaiting a pilot can anchor in 8m near the buoy.

Vessels load cargo at an anchorage, abreast the town, in a depth of 6.4m. The port has two small piers for vessels to moor.

Caution.—Banco Reverso, a drying bank on the E side of the entrance channel, was extending to the NW, with the depths on the E side of the bar over the entrance channel being less than charted.

Camocim to Fortaleza (Mucuripe)

2.20 The coast from Camocim, backed by sandhills of uniform height, trends ENE for about 22 miles to Ponta de Jericoaco area. Serra Tiaia stands about midway between the two above points and about 14 miles inland and can be seen for a distance of 30 miles offshore.

Ponta de Jericoacoara (2°47'S., 40°30'W.) rises to a remarkable saddle-shaped hill. The E and higher part appears as an island from offshore. There is a prominent white house on the W slope of this hill and a fishing village at the foot of the slope. A light is shown from the point, which should be given a berth of at least 1 mile.

Anchorage.—There is sheltered anchorage about 2 miles W of Ponta de Jericoacoara in depths of 6 to 8m, sand and mud, good holding ground. The anchorage sheltered from the prevailing winds, which blow from between NE and SE, and also from the W current.

From Ponta de Jericoacoara to Ponta de Itapage, a wooded point 31 miles to the E, the coast is low and sandy.

Deep-draft vessels should not approach within 30 miles of this coast as less water than charted has been reported.

Rio Acarau (2°50'S., 40°08'W.) lies about 8 miles W of Ponta de Itapage. Shifting sandbanks, which extend about 2

miles offshore, obstruct the entrance. Small craft with a draft of 2.4m can enter the river at HWS but may touch bottom in places.

A wreck buoy is moored about 4 miles N of the river entrance. The channel into the river is marked by stakes. The village of Acarau is situated on the E side of the river about 4 miles above its mouth.

Vessels may anchor in about 4m within the mouth of the river.

Ponta de Itapage (2°51'S., 40°00'W.) is a wooded point located about 9 miles E of the mouth of Rio Acarau. A light is shown about 4 miles ESE of the point.

The coast from Ponta de Itapage trends ESE for about 42 miles to Ponta Mundau.

The coast is backed by sandhills covered with vegetation and can be seen from 12 to 14 miles offshore as far along the coast as Ponta dos Patos, about 21 miles ESE of Ponta de Itapage. Several fishing villages are situated along the coastline.

The coast between Ponta de Itapage and Ponta dos Patos is fringed by the E part of Banco Acarau. The coast between Ponta dos Patos and Ponta Mundau is fringed by sandbanks and reefs which extend about 0.5 mile offshore. Fishing stakes can be found along this part of the coast.

Ponta Mundau (3°11'S., 39°23'W.) is formed by dunes covered with low vegetation and has a prominent grove of palms on it.

Morro das Melancias is a saddle shaped hill and is visible for about 20 miles in clear weather.

The W summit is covered with vegetation and is a dark color; the E summit is sandy and whitish. A light is shown from Ponta Mundau.

Anchorage.—Anchorage may be taken 1.5 to 2 miles W of Ponta Mundau in depths of 7m, sand. The reefs which extend about 0.5 mile N and W from Ponta Mundau must be given a wide berth when approaching the anchorage. Anchorage can also be taken about 4 miles NE of the point, in depths of 10 to 11m, sand, protected from W, SW, and S winds.

Lighted production platforms stand 21 and 27 miles ENE and 32 and 34 miles E of Ponta Mundau light. The platforms are connected to each other by a submarine pipeline, which continues on to Fortaleza.

Caution.—A dangerous wreck lies about 3 miles W of the first platform.

2.21 Ponta Aguda (3°21'S., 39°07'W.), 18 miles SE of Ponta Mundau, is low and sandy. There are some cliffs with reddish patches W of the point. The village of Lagoinha is located about 1 mile W of the point.

Ponta Paracuru (3°24'S., 39°00'W.), marked by a light, is very conspicuous and lies about 7 miles ESE of Ponta Aguda. It can be identified by a conical wooded hill which rises 2 miles inland and is visible from nearly 18 miles offshore. The mouth of Rio Curu, with several villages in its vicinity, lies about 5 miles WSW of the point. There is anchorage for small craft under the shelter of Ponta Paracuru and the mouth of the Rio Curu.

An L-shaped pier extends about 0.3 mile NW from the W side of the point. Lights are shown from the pierhead.

Ponta Pecem (3°33'S., 38°49'W.), about 13 miles SE of Ponta Paracuru, is a prominent landmark because of Morros

Tres Irmaos, which can be seen from 20 miles offshore. The point is marked by a light.

Pico Da Rajada (3°54'S., 38°44'W.), located in the Serra de Marnaguape, about 16 miles SW of Fortaleza, is 920m high. It is the first point sighted in the area, due to its height.

Ponta de Mucuripe (3°42'S., 38°28'W.), the E entrance point of Enseada de Mucuripe, projects about 1 mile seaward from the general trend of the coast. The point is formed by a chain of sandhills which rise to a height of 72m. Ponta de Mucuripe Light is shown 1 mile S of the point. An auxiliary light is shown from the old light structure close on the N end in the event that Ponta de Mucuripe Light is not operating.

Molhe de Mucuripe, the breakwater which shelters the harbor and Enseada de Mucuripe, extends about 1 mile WNW from the point. A light is shown from the seaward end.

Caution.—A restricted area, used for rocket firings, is established between Ponta Pecem and Ponta de Mucuripe. It extends from close offshore to approximately 35 miles NNE and 50 miles NE.

Fortaleza (3°43'S., 38°29'W.)

World Port Index No. 12650

2.22 The port of Fortaleza is situated in Enseada de Mucuripe and is sheltered by Molhe de Mucuripe, which extends from Ponta de Mucuripe.

The old port of Fortaleza, which borders the city, is no longer in use. It stands on a plateau 20 to 30m high, extending 5 miles W from Ponta de Mucuripe along the shore, and is prominent from the offing.

Winds—Weather.—The port is exposed to winds from the W and N. The prevailing winds are from the E and SE. The strong winds that commonly blow in the area will at times cause some difficulty in the maneuver and mooring of vessels.

Tides—Currents.—The tidal range is 2.6m at springs and 1.4m at neaps. During flood tide the current runs close to the coast and in the proximity of the wharf takes a SE direction with a velocity of 1 knot. During ebb tide it has a WNW direction, at a rate of 0.5 knot.

Depths—Limitations.—The approach channel, leads across the bar in a SE direction from a position about 0.5 mile W of the head of the breakwater for a distance of about 1 mile and then in a general E and ENE direction to the N extension of the wharf. The channel is marked by lighted buoys. The maximum size of vessel for entry is 210m length; 40m beam; 10m draft.

Recife da Velha, minimum depth of 3.3m, Pedras do Justin, minimum depth of 7.1m, and Recife do Meireles, minimum depth of 1.5m lie up to 1.75 miles offshore, N of the old port area. Pedras do Justin and Recife do Meireles are marked by buoys.

There is a total of 1,660m of berthing space available at the docks, with depths from 5 to 10m.

An oil pier extends about 0.5 mile NW from the end of the wharf. A 90m long berthing area has a depth alongside of 11m and can handle vessels of 34,000 dwt with a maximum length of 170.6m. Night berthing is reported possible.

Vessels with a draft of 8m or greater or larger than 4,000 grt must be accompanied by a tug.

Aspect.—A vessel approaching the port, when 15 or 16 miles away, will sight the Mucuripe Light Tower, a conspicuous white round masonry tower with black bands, located on a 62m high hill, 1.25 miles S of Ponta de Mucuripe.

The conspicuous white silos on the wharf and the conspicuous twin gray towers of the cathedral standing 3.5 miles WSW of Ponta de Mucuripe will be sighted at about the same time.

Ponta de Mucuripe, on which there is an abandoned lighthouse, will be seen when closer to the city. Television towers lie 1.25 and 3 miles, respectively, SW of Ponta de Mucuripe.

Pilotage.—Pilotage is compulsory for all foreign vessels and Brazilian vessels over 500 grt. Pilots board vessels from a red motor launch marked "Pilots" either 1 mile NNW or 1 mile WNW of the head of Molhe de Mucuripe.

Vessels can anchor within 0.3 mile of either position while awaiting pilot.

Anchorage.—There are designated anchorage areas within Enseada de Mucuripe which are best shown on the chart. The charted anchorage areas are used, as follows:

1. Anchorage Area 1—Vessels with a draft greater than 8m.
2. Anchorage Area 2—Vessels with greater than 2,000 gross tons, including LASH vessels, with a draft of up to 8m. LASH vessels have priority for anchoring.
3. Anchorage Area 3—Vessels of 200 to 2,000 gross tons.
4. Anchorage Area 4—Harbor support craft.
5. Anchorage Area 5—Fishing boats and motor boats.
6. Anchorage Area 6—Non-powered fishing vessels.
7. Anchorage Area 7—Vessels with a draft greater than 9m.

Depending on vessel size and description, Anchorage Area 1 and Anchorage Area 2 are also designated Quarantine and Explosives Anchorage Areas.

Caution.—Vessels coming from the E, and being overtaken by a very strong E or ENE wind, should make allowance, for the combined effect of wind and current could set them onto the breakwaters.

Many small fishing craft may be found, during daylight, in the vicinity of the port and up to 20 miles from it.

2.23 The coast from Ponta de Mucuripe trends SE for about 61 miles to Ponta Maceio, the W entrance point of Rio Jaguaribe. The coast is a succession of sandhills, which attain heights of about 91m. There is little vegetation along this part of the coast.

Morro Pacoti (3°52'S., 38°23'W.), 40m high, marks the E entrance of Rio Pacoti, about 8 miles SSE of Ponta de Mucuripe. Recife da Cacoeira lies up to 1.5 miles offshore, 2 miles ESE of the mouth of Rio Pacoti. The sea breaks over the reef at LW during a fresh breeze.

Cabo Iguape (3°56'S., 38°17'W.), about 18 miles SE of Ponta de Mucuripe, is 120m high and somewhat salient. The cape can be seen about 23 miles offshore. Reefs which break, fringe the cape and extend a short distance from it. The 20m curve lies about 13 miles off Cabo Iguape. A small bay, bordered by steep cliffs, lies W of the cape.

A gunnery firing area has been established about 4 miles NE of Cabo Iguape.

Rio Choro (4°06'S., 38°09'W.) flows into the sea about 12 miles SE of Cabo Iguape. Small crafts, with drafts up to 2m, enter at HW and anchor in 2.4m within the bar.

Local knowledge is essential for safe navigation as access to the river's mouth is difficult due to the rocks and shifting sandbanks. The bar can seldom be crossed from January to July.

A dangerous wreck lies about 4 miles ESE of the mouth of the Rio Choro.

Morro Cascavel (4°08'S., 38°16'W.) and **Morro Azul** (4°31'S., 38°06'W.), both about 180m high, are isolated conical features which can be useful in identifying this stretch of coast. The hills rise 7.5 miles WSW and 24.5 miles S of the mouth of the Rio Choro, respectively.

Rio Pirangi flows into the sea about 26 miles SE of the mouth of the Rio Choro. Small craft drawing 2m, enter at HW and anchor in 3m within the bar. Local knowledge is essential for safe navigation as access across the bar is dangerous.

Ponta Maceio (4°25'S., 37°46'W.), on which there are reddish cliffs, lies 1.5 miles NNW of the W entrance point of Rio Jaguaribe. There are two sandhills within the mouth of the river on its E side which appear as islets when seen for a distance offshore. A dangerous wreck lies 9.5 miles NNE of Ponta Maceio in 7.5m of water. A light is shown 0.5 mile S of the point.

2.24 Aracati (4°34'S., 37°46'W.) ([World Port Index No. 12660](#)), is a small port, located on the E bank of Rio Jaguaribe, about 9 miles from the mouth of the river. Pilotage is compulsory. Small vessels drawing 3m can normally cross the bar during HWS although the bottom has been touched at this draft.

Small vessels can anchor in 4m, abreast the town of Fortinho, about 3 miles inside the mouth of the river.

Larger vessels can obtain anchorage, in depths of 7 to 9m, sand and mud, with shelter from S, SW, and W winds, with the light on Ponta Macelo bearing 242°, distant 3.5 miles. This anchorage is very exposed to the strong winds from between ENE and ESE, which blow from June to December.

The coast from the mouth of Rio Jaguaribe trends SE for about 21 miles to Ponta Grossa. This part of the coast is formed by sandhills and low hills, covered with vegetation. Banco do Retiro, with depths of less than 5.5m, borders this stretch of the coast and lies up to 5 miles offshore.

Off this stretch of coast depth of less than 10m extend up to 10 miles offshore. There is an 8.9m shoal 13 miles NNE of Ponta Grossa.

Morro do Mandioca (4°34'S., 37°40'W.), about 10 miles SSE of the mouth of Rio Jaguaribe, is conical in shape and appears dark due to the vegetation. The hill can be seen from about 20 miles offshore in clear weather.

Another hill, Morro Urubu, similar in appearance, stands about 2 miles NW of Morro do Mandioca. A village is situated at the foot of this hill.

The village houses stand out against the dark background of the hill.

A large sandal with two conical peaks stands about 5 miles SE of Morro do Mandioca. This sandal can be seen about 17 miles offshore.

Ponta Grossa (4°38'S., 37°30'W.), about 100m high, is steep and salient; it stands out well against the land in its vicinity. The point can be seen about 21 miles offshore.

A hillock, when bearing about 240°, opens out near the base of Ponta Grossa.

Rocks, some of which dry, lie as far as about 2 miles from the point.

Enseada do Retiro-Grande lies close W of Ponta Grossa. A ship entering the cove should give Ponta Grossa a berth of about 3 miles and should steer 215° for a hill within the SW shore of the cove. Banco do Retiro should be avoided.

The coast from Ponta Grossa trends ESE for about 12 miles to Ponta Cajuais, then SSE for about 17 miles to the mouth of Rio Mossoro.

Between Ponta Grossa and Ponta Cajuais, the coast appears as two steps, the lower steps being reddish and the upper gray.

A light is reported to stand about 2 miles inland from Ponta Cajuais.

Between Ponta Cajuais and the mouth of Rio Mossoro, the coast is higher than the preceding stretch. Banco dos Cajuais, which dries in places, borders this stretch of the coast and has depths of less than 5.5m up to 7 miles offshore.

Morro do Tibau (4°50'S., 37°17'W.), about 10 miles SSE of Ponta Cajuais, is a prominent reddish hill which can be seen for about 19 miles offshore.

Rio Mossoro

2.25 Ponta do Pontal (4°56'S., 37°09'W.) is the E entrance point of Rio Mossoro. The river, about 180 miles long, rises in Serra dos Cariris-Velhos. It is navigable for small craft for about 12 miles above its mouth.

The mouth of the river is obstructed by sandbanks which dry in places at LW and extend about 1.5 miles offshore. Recifes do Joao da Cunha, which seldom dries, lies about 17 miles NE of the mouth of the river. This group of rocks is about 2 miles in extent. The sea breaks heavily over them with a NE wind but from February to May there are seldom any breakers which mark them.

The approach to the mouth of the river and the channel within the bar are marked by buoys, some of which are lighted. The buoys are moved as necessary to conform with the changes in the channel due to the shifting sandbanks. A light is shown from Ponta Upanema, about 3 miles E of Ponta do Pontal.

Four dangerous wrecks lie between 3 and 6 miles N of the light on Ponta Upanema.

2.26 Termisa Offshore Terminal (4°49'S., 37°03'W.) also known as Porto-Ilha, a salt storage island, with a walkway and conveyor bridge, leads about 0.2 mile SSE to a slowing platform and bridge shiploader. It is located on the NW side of the above-mentioned channel.

The terminal is reported to carry a stock of 100,000 tons of salt.

Winds—Weather.—From January to June, winds blow from the NE with occasional calms. From July to October, winds blow strongly from the E, being strongest in August.

The rainy season is from January to May. From January to May the sea is comparatively calm, becoming moderate until August; from August to December, the sea is heavy.

Tides—Currents.—In the vicinity of the terminal, the current has a rate of 0.8 knots at springs in a WSW direction about 4 hours before HW, and in a NE direction about 3 hours after HW.

In the vicinity of Recifes do Joao da Cunha and the anchorage, the flood current sets SW at a rate of up to 1 knot, while the ebb current sets NE at a rate of up to 1.5 knots.

Depths—Limitations.—A buoyed channel, with a least depth of 13m and a width varying between 400 and 1,000m, is entered about 2.2 miles ENE of the shallowest part of Recifes do Joao da Cunha. The 9.2 mile long channel passes S of these reefs and leads to a point about 1 mile SW of the terminal. The area between this point and the terminal is a maneuvering basin, and has a least depth of 11m.

On the SW side of the artificial island there is a quay 195m long, with a depth of 6m alongside. This berth is used for the discharge of salt and can accommodate 3 barges.

Bulk carriers moor against three dolphins, with a span of 166m, with an alongside depth of 12m. Vessels berth port side-to. No night navigation is permitted.

The maximum dimensions of a vessel that can be accommodated are 35,000 dwt, a length of 180m, a beam of 22m, and a draft of 11m.

Aspect.—The stockpile of salt at the terminal appears as a large white mound and can be detected on radar at ranges of over 24 miles.

Pilotage.—Pilotage is compulsory for all foreign vessels over 2,000 grt and should be requested by telegram at least 10 hours prior to arrival. Pilots board at the anchorage from launches painted red with a black "P" on either bow.

Regulations.—A tug must be present during the mooring of all vessels. Vessels larger than 10,000 dwt must employ 2 tugs. Mooring is not attempted when wind speed is greater than 25 knots.

Anchorage.—Large vessels awaiting a pilot or berth should anchor, in a depth of 11 to 12m, about 3 miles ENE of the shallowest part of Recifes do Joao da Cunha.

The inner anchorage, known as Fondeabdoiro do Lamarao de Dentro is situated 2 miles NW of Ponta Upanema and has depths of 5.5m, sand. It is used to transship salt from lighters and should not be approached without local knowledge.

Areia Branca (4°57'S., 37°08'W.) stands on the E bank of Rio Mossoro, 2 miles above its mouth. There are no alongside berths for sea-going vessels, with all cargo being worked to and from lighters, usually at the anchorage and Termisa Offshore Terminal.

Caution.—A 6m shoal was reported to lie about 11 miles ENE of the shallowest part of Recifes do Joao da Cunha.

Ponta do Pontal to Ponta do Alagamar

2.27 The coast from Ponta do Pontal trends E for about 17 miles to Ponta do Mel then SE for about 14 miles to Ponta do Alagamar.

Ponta do Cristovao (Ponta Redonda) (4°55'S., 36°58'W.), about 10 miles E of Ponta Upanema, is an oblong-shaped

barren sandal. The point was reported to give good radar returns. A village is located near the point.

Ponta do Mel (4°57'S., 36°53'W.), 5 miles ESE of Ponta do Cristovao, has prominent reddish cliffs about 90m high that are visible at a distance of about 20 miles. The cliffs stand out against the sandhills in the vicinity. From the N, Ponta do Mel appears as two points, the E of which appears broader. A light is shown 1 mile S of the point.

Ponta do Alagamar (5°06'S., 36°41'W.) is a low sandy point lying 15 miles SE of Ponta do Mel and is the E entrance point of Rio Acu. A light is shown about 2 miles E of the point.

A conspicuous water tower with obstruction lights is situated about 1.2 miles E of the point.

Rio Acu (Rio Piranhas) (5°06'S., 36°41'W.) is the main branch of Rio Piranhas which rises in Serra dos Cariris Velhos.

The mouth of Rio Acu is obstructed by shifting sandbanks, which dry in places, and extend up to 2.5 miles offshore.

Between the sandbanks, there are two bars, a N bar and a S bar, with a channel leading over each.

The N bar channel is recommended as it is deeper and buoyed. This bar affords access at HW for drafts up to 2.8m.

A dangerous wreck, marked on its N side by a lighted buoy, lies about 5.7 miles NW of Alagamar Light.

Pilotage is compulsory and vessels anchor in Fondeadouro do Lagamar, 5.5 miles NNW of Alagamar Light, in depths of 8.8 to 9.4m, fine sand. A second wreck lies about 4 miles NNW of the light.

Macau (5°02'S., 36°38'W.) is located about 3 miles above the mouth of Rio Acu. The principal export is salt which is loaded at the anchorage.

2.28 The coast trends E for about 71 miles from Pontal do Alagamar to Cabo Calcanhar. Several rivers of no importance to navigation flow into the sea along this stretch of the coast.

Ponta do Tubarao (5°04'S., 36°30'W.), about 11 miles E of Pontal do Alagamar, is formed by sandhills. This point appears to be higher than it actually is from the offing.

A prominent cone-shaped hill stands about 1 mile S of Ponta do Tubarao. This hill stands out from the hills to the W because of its lighter color. A small lighthouse stands on the W side of the point.

A lighted offshore platform stands about 5 miles WNW of Ponta do Tubarao. A submarine pipeline extends in a SE direction from the platform to the shore.

Morro Mangue Seco (5°09'S., 36°25'W.), about 7 miles SE of Ponta do Tubarao, can be seen from about 21 miles offshore in clear weather.

Urca do Tubarao (4°51'S., 36°27'W.), the W extremity of which lies about 13 miles N of Ponta do Tubarao, is composed of sand and coral heads having least depths of 4m. The reef seldom breaks but swells are formed during moderate winds.

Ponta de Galinhos (5°05'S., 36°18'W.), from which a light is shown, lies about 13 miles E of Ponta do Tubarao. The point marks the E entrance of Rio Guamare. The village of Guamare is situated on the W side of the river close within its mouth.

A dangerous sunken wreck lies in 5°01'S, 36°15'W, position approximate, about 5.2 miles NNE of Ponta de Galinhos. A drying patch lies 1.5 miles NW of the point.

A shoal with depths ranging from 7.8 to 10m lies 11 miles NNW of Ponta de Galinhos.

Numerous oil platforms showing lights, and submarine pipelines exist in an area between 7 and 15 miles N of Ponta de Galinhos. An offshore oil berth with six mooring buoys, marked by a lighted buoy, lies about 11 miles NNW of Ponta de Galinhos.

Caution—Attention is called to the fact that in many cases the pipelines are not buried; charted depths may be decreased up to 2m. Vessels should not anchor or trawl in the vicinity of the pipelines.

Ponta de Santo Alberto lies about 17 miles E of Ponta de Galinhos. Coconut trees, which are the E most growth of trees in this vicinity and visible from 12 to 15 miles offshore, mark the point.

A light is shown from Ponta Caicara, about 2 miles W of Ponta de Santo Alberto. The village of Caicara is situated near Ponta Caicara. A church is located in the village.

Ponta dos Tres Irmaos (5°03'S., 35°59'W.), about 2 miles E of Ponta de Santo Alberto, consists of four cliffs which are bordered by dark rocks.

Ponta Santo Cristo, about 23 miles E of Ponta dos Tres Irmaos, is a narrow promontory about 1 mile long.

A village is situated close SSW of Ponta Santo Cristo and a church is situated in the village.

Ilha de Cima, a hill, stands about 6 miles W of Ponta Santo Cristo. The land in the vicinity is low which makes the hill appear as an island from the offing.

The prominent cliffs of Sao Jose lie about 2 miles E of Ponta Santo Cristo. The W part of the cliffs consists of reddish clay. The E part changes to whitish clay.

2.29 Morro Branco (5°09'S., 35°32'W.), about 60m high, stands about 5 miles ESE of Ponta Santo Cristo. This barren hill, composed of white sand, is a good landmark as it is the highest point of land on this part of the coast. Morro Branco can be seen about 18 miles offshore.

Caution.—Several reefs with heads less than 3.6m, shoals which dry at LW, and dangerous wrecks, lie within the 18.3m curve between Ponta do Tubarao and Cabo Calcanhar. The reefs and shoals are steep-to. The bottom is composed of white sand, coral, and gravel.

In general, the water over the shoals is green and this color is distinctive from the color of the water outside them.

The current is strong and sets WNW and NW. The tidal rise over the shoals is about 3.1m at springs and 1.8m at neaps.

Ships without a pilot on board should avoid these dangers by navigating well outside the 20m curve.

Cabo Calcanhar to Natal

2.30 Cabo Calcanhar (5°10'S., 35°29'W.), from which a light is shown, is the extreme NE point of Brazil. The point is formed by sand dunes of very little height. In clear weather the lighthouse can be seen for a distance of 15 miles.

At Cabo Calcanhar, the aspects of the coast changes. To the SE of the cape there are large coconut groves and a number of towns and villages.

A number of elevations of land stand out and are visible 10 to 20 miles offshore.

Cidade de Touros (5°12'S., 35°28'W.) stands on low ground at the head of Enseada de Touros, 3 miles SE of Cabo Calcanhar.

The town church and the dark colored cliffs lying about 0.2 mile NW of the town are prominent by day and the street lights of the town are prominent at night.

Anchorage for small craft can be obtained off the town in a depth of 3.5m, mud.

Ponta da Gamaleira (5°13'S., 35°25'W.) lies 5.5 miles SE of Cabo Calcanhar and is formed by sandhills. It is the first land sighted by vessels coming from the N.

A light, the structure of which has been reported to be difficult to see during the day, is shown from the point.

Baixo do Rio do Fogo lies about 4 miles E of Ponta da Gamaleira. The shoal has a depth of 0.2m, over which the sea breaks. A light is shown from the center of the shoal. A wreck lies 1.5 miles NW of the light.

Risca do Zumbi (5°11'S., 35°11'W.), a rock with a depth of 5m lies 10 miles ENE of Baixo do Rio do Fogo.

Depths of 11.9m and 10.4m lie 3 miles S and 5 miles SSW, respectively, of this rock.

Ponta do Caconho, 12 miles SE of Cabo Calcanhar, consists of light colored sandhills which are slightly higher than the coast to the NW. The point is surrounded by several submerged rocks.

Baixo da Teresa Panca, marked by a light, and Baixo de Maracajau lie up to 4 miles E of Ponta do Caconho.

Canal de Sao Roque is about 23 miles long and has a minimum depth of 4.2m. Its width is restricted to 1 mile abreast Baixo do Teresa Panca. This channel is used mainly by local vessels of shallow draft. It should not be attempted without local knowledge and good visibility.

Pilotage for Canal de Sao Roque may be obtained at Recife and Areia Branca or at other ports in the vicinity.

Cabo de Sao Roque (5°29'S., 35°16'W.) is a white sandy point, about 55m high, with vegetation on its summit. A light is shown from a position about 0.6 mile S of the cape. The cape is reported to be a good radar target.

Rocks, with depths of less than 2m, on which the sea occasionally breaks, lie 1 mile E of the cape.

Between Cabo de Sao Roque and Punta de Santa Rita, 13 miles SSE, the coast has no remarkable features. It is backed by hills from 35 to 60m high, which are sparsely wooded, and has several villages and coconut groves along it.

Caution.—Shoal patches, with depths of 11.2m and 13.3m, lie about 13 miles ESE of Cabo de Sao Roque. A shoal with a depth of 8.9m lies 14.5 miles ENE of Cabo Calcanhar, another shoal with a depth of 22m lies approximately 33 miles NNE of the same point.

Natal (5°47'S., 35°12'W.)

World Port Index No. 12690

2.31 The port of Natal is situated at the mouth of the Rio Pontengi. The river, about 100 miles long, rises in the Serra do Angico and flows into the sea through an opening in the barrier reef. The barrier reef forms a natural breakwater for the port.

Winds—Weather.—The prevailing winds most of the year are from the ENE to SE.

Tides—Currents.—The flood current attains rates up to 1.5 knots. The ebb current attains rates up to 4.5 knots. The greater rates occur during the rainy season and have been observed between Baixinha and Banco das Velhas.

When offshore, due allowance should be made for the currents which set very strongly onshore at times, especially during SE winds, when the current is N. During NE winds, the current is S.

Depths—Limitations.—The maximum safe draft for entering the port was 7.3m at HW and 5.5m at LW. Other limiting dimensions are a maximum length of 180m and a beam of 26m.

The port is entered through a gap, about 0.1 mile wide, in the barrier reef, which forms a natural breakwater trending N to S, abreast the mouth of the river.

The channel is led between lighted buoys, and the fairway is marked No.1, moored at 0.2 mile NE of Cabeça de Negro reef. The channel has a least depth of 8.7m with an average width of 90m, sand and mud bottom.

The main commercial wharf is 400m long with depths alongside of 7.3 to 7.6m. An oil terminal is located about 0.1 mile N of the main wharf and can handle tankers with a maximum length of 158.5m, a beam of 21m, and a maximum draft of 7.6m. Night berthing is possible.

It has been recommended that berthing be done port side-to-on the ebb tide, while unberthing be done on the flood tide.

A naval base, which has an L-shape jetty projecting 50m NE, has depths of 5m alongside and is about 2 miles upstream from the main wharf.

Aspect.—The coast near the mouth of Rio Potengi is low and has few prominent features. Natal Light, near Ponta Mae Luiza, is a good landmark. Morro do Pinto, about 3 miles S of the river mouth is another. The hill can be seen from a distance of about 23 miles.

An old fort stands on the reef 0.3 mile S of the reef's N extremity. A conspicuous water tower and a conspicuous church stand 1.5 and 1.75 miles, respectively, S of the fort. Another conspicuous church situated 0.75 miles SW.

A prominent television tower stands about 2 miles SSW of Natal Light and a conspicuous water tower is situated near the coast, about 5 miles S of Morro do Pinto.

Pilotage.—Pilotage is compulsory and it is requested that a minimum of 2 hours notice be given prior to arrival. Pilots will board from a red painted launch with a black "P" on each bow. Pilots meet incoming vessels in the vicinity of 5°44.8'S, 35°10.5'W. Pilotage is available 24 hours a day, although it has been reported that pilots will board vessels only between the hours of 0800 and 1800.

Regulations.—The maximum speed permitted in Rio Potengi is 8 knots. The port is open to tankers during daylight hours only.

Anchorage.—There are two outer anchorages.

The anchorage area in position 5°45.2'S, 35°10.5'W is designated for vessels awaiting pilots or berth. This anchorage is also used by vessels in transit, but with a 24-hour prior request for approval made to the Port Captain.

Quarantine anchorage area lies 0.5 mile ESE of Forte dos Reis Magos.

Vessels are prohibited to anchor S of the designated area where submarine cables exist in the vicinity of Praia do Meio.

Caution.—In the area where access channel pass, between the bar and the entrance to Gamboa Manimbu (5°45.5'S., 35°12.5'W.) one vessel is allowed to make the passage at a time, vessels are not to meet end on or by pass each other.

Off-lying Islands and Rocks

2.32 Penedos de Sao Pedro e Sao Paulo (0°55'N., 29°21'W.), a group of volcanic rocks, also known as St. Paul's Rocks, and lying about 520 miles NE of Cabo de Sao Roque, belongs to Brazil. The highest rock is about 20m high and is visible from 8 to 9 miles. The rocks sometimes appear as sails.

The upper part of the larger rocks are whitened by guano. A light stands about 0.1 mile SSW of the highest rock.

The bank on which the group lies is steep-to and is reported to extend 0.5 mile W. A depth of 9.1m, rock, lies about 0.2 mile W of the light.

Penedos de Sao Pedro e Sao Paulo lie within the N limit of the equatorial current which sets W. The current near this group generally sets WNW with rates of 1 knot to 2 knots.

Currents setting in other directions are not infrequent, especially from February to July.

A ship should approach the vicinity of these rocks with caution as there is nothing to indicate the approach to them.

The current must be taken into account. SE winds prevail from June to December while NE winds prevail from January to May.

In good weather, landing can be made in a cove, which is entered from NW, between the two largest rocks. The cove is about 45m wide at its entrance, 91m long, and has depths of 9.1 to 12.8m. The cove provides excellent shelter for boats.

Caution.—Since this region is of volcanic formation and is subject to seismic shocks, ships passing in the vicinity may be subject to what appears to be grounding. Such incidents are caused by shock waves from seismic disturbances.

An obstruction is reported to lie about 10 miles SW of the rocks.

2.33 Arquipelago de Fernando de Noronha (3°52'S., 32°26'W.) lies about 200 miles ENE of Cabo Calcanhar and is of volcanic origin. The group consists of Fernando de Noronha, five smaller islands, and a number of islets and rocks.

Ilha de Fernando de Noronha (3°52'S., 32°26'W.), when seen from the offing, appears rugged and mountainous. The island is covered with vegetation. Pico, 323m high, is the highest peak on the island. This barren and rugged mountain stands on the NW side of the island and can be seen in clear weather more than 30 miles. The island gives good radar returns from NE up to 20 miles.

Ponta de Santo Antonio, the NE extremity of the island, is a narrow peninsula about 0.3 mile long. Morro de Santo Antonio, 104m high, stands about 1 mile SW of the point.

Two radio towers are located on this part of the island. A dangerous rock lies 0.4 mile SW of Ponta de Santo Antonio.

Baia de Santo Antonio indents the N portion of the island on the W side of Ponta de Santo Antonio. A fort is located on the S shore of the bay. The fort has a signal station.

Morro do Frances, 198m high, stands about 1 mile S of Ponta de Santo Antonio. Pontinha, the E extremity of the island, lies about 0.5 mile ESE of Morro do Frances. Between Morro do Frances, Morro de Santo Antonio, and Pico, there is a plateau on which a village is situated. The buildings of a prison comprise a large part of the village. These buildings are prominent.

Morro do Espinhaco, 223m high, stands on the SE part of the island about 1 mile SSE of Pico. An emergency landing field for large aircraft is located between Morro do Espinhaco, Pico, and the hills in the SW part of the island.

An aeronautical radiobeacon is located near the SE corner of the landing field. An aviation light is shown from Morro do Pico.

Ponta da Sapata, the SW extremity of the island, a narrow peninsula about 0.5 mile long. There is a natural tunnel on the peninsula.

Alto da Bandeira, 193m high and marked by a light, stands less than 1 mile E of the point. A rock, awash, lies 0.3 mile W of Ponta da Sapata.

Other rocks, awash, have been reported to lie 0.4 and 0.8 mile S of Ponta da Sapata.

Ilha Rata (3°49'S., 32°23'W.), the largest of the smaller islands, lies about 1 mile NE of Ponta de Santo Antonio. A narrow channel with a depth of 7m lies between Ilha Rata and Ilha do Meio, close SW. The channels between the other islands of the group are foul.

A light is shown near the center of Ilha Rata. Ilha Rata should be given a wide berth to allow for the strong currents in the vicinity.

Fernando de Noronha is fringed by reefs, most of which extend less than 0.3 mile from the shore. Several dangerous rocks lie as far as 2 miles off the E, S, and SW sides of the island.

A 7.3m shoal, position doubtful, was reported to lie outside the 20m curve about 0.6 mile NNW of Pico.

Tides—Currents.—Arquipelago de Fernando de Noronha and Atol das Rocas lie within the equatorial current which sets W. Currents setting in other directions are not infrequent. The westerly currents, experienced in these areas, attain rates of up to 2 knots. Occasionally these rates are exceeded.

Anchorage.—Anchorage can be taken in Baia de Santo Antonio. The best anchorage is in 14.6 to 24.0m, sand, about 0.5 mile offshore with Pico bearing 214° and the fort on the S shore of the bay bearing 163°.

The anchorage is sheltered from the prevailing SE and E winds. During NE winds, ships anchor closer inshore, in 10.9 to 20m. During N or NW winds, the anchorage is unsafe.

The usual landing place is on a beach, abreast the village, in Baia de Santo Antonio. Landing is made by means of a raft with a raised platform which works with guides around a hawser secured to a buoy. Years ago, the raft and hawser were not seen.

In 1990, construction of a L-shaped mole was in progress at position 3°50'S, 32°24'W. Landing is difficult as there is a surf on the beach. A wreck lies near the beach.

Landing can also be made on the NW side of Fernando de Noronha in Enseada do Carreiro de Pedro, about 2 miles ENE of Ponta da Sapata.

Landing on the S side of Fernando de Noronha is seldom possible. Only with favorable weather conditions can landing be made in Baía do Sueste. This bay lies about 2.2 miles WSW of Pontinha.

Landing can be made on Praia do Leão, about 2 miles E of Alto da Bandeira, providing the weather conditions are favorable. A wreck lies near Praia do Leão.

There is a good landing place in a cove on the SW side of Ilha Rata.

The area surrounding Ilha de Fernando de Noronha constitutes the Fernando de Noronha Marine National Park.

Anchorage, hunting and fishing and any disturbance of the environment are prohibited in this area.

2.34 Atol das Rocas (3°52'N., 33°49'W.). a coral atoll about 127 miles NE of Cabo Calcanhar, is 1.75 miles from E to W and 1.5 miles from N to S. The atoll dries about 1.8m. Ilha do Farol and Ilha do Cemiterio lie on its W side. Ilha do Farol is the northern and larger of the two. At LW the islets are joined together with the reefs.

A light is shown from Ilha do Farol. The lighthouse and the breakers over the reefs make it possible to identify the atoll.

The remains of several wrecks lie scattered on the reefs.

The 10 and 20m curves lie as far as 0.3 and 0.75 mile, respectively, around the atoll. Several rocks, with less than 5.5m, lie inside the 20m curve, off the W, NW, and NE sides.

A bank, with depths of 16.5 to 46m, extends about 13 miles ENE and E from Atoll das Rocas. The currents attain rates of about 1.5 to 2 knots in the anchorage.

A landing place for boats is located at the SW end of Ilha do Farol. A boat passage leads between a gap in the reefs, about 15m wide on the NW side of the atoll, and the landing place. The reefs open out to form a pool and the sea is calm here. A submerged rock lies in the middle of the passage.

Boats should pass S of this rock even though it can be passed over at higher water.

When passage through the entrance can not be made because of the lowest tides, a boat can moor on a reef N of the entrance but care must be taken to avoid a drying rock which lies close W of this landing.

Another boat passage leads through a narrow gap in the N part of the reef, but this passage can only be used in good weather. At HW a boat can reach the landing place in Ilha do Farol but at LW it has to beach on the shore of a small lake within the atoll. The dangers can be avoided as the water is clear.

Atol das Rocas is an established conservation area. It is prohibited to anchor, disembark, dive, hunt, fish, dispose of garbage, or any other alteration to the environment, within the boundaries of the prohibited area.

Natal to Cabedelo

2.35 Between Natal and Cape Bacopari, about 40 miles SSE, the coast is marked by isolated conical hills. The shore line consists of white sandy beaches.

From Cabo Bacopari to Ponta das Trincheiras, about 19 miles to the S, the coast is formed by a continuous line of white sand dunes covered by intervals of bushes.

From Ponta das Trincheiras to Ponta de Lucena, about 14 miles SSE, the coast is intersected by small rivers.

Ponta da Tabatinga (6°03'S., 35°06'W.), about 18 miles SSE of Natal, is of a reddish color and marked by a light. The hills inland are covered with vegetation. A summit 127m high rises 2 miles SSW of Ponta da Tabatinga.

Ponta dos Moleques (6°15'S., 35°03'W.), a cliff having a flat top and devoid of vegetation, is located about 11 miles SSE of Ponta da Tabatinga. Ponta da Cancela, a point which resembles a cask standing on end, and is visible 18 miles offshore, is situated 1 mile NNW of Ponta dos Moleques.

Anchorage may be obtained by vessels with local knowledge about 2 miles NW of Ponta dos Moleques, in depths of 8 to 10m, soft mud, sheltered from the S.

Cabo Bacopari (6°22'S., 35°00'W.) is located 8.5 miles SSE of Ponta dos Moleques and shows a light. Baía Formosa lies close NW of the cape and appears as an extensive inlet.

Morro do Chapéu (6°23'S., 35°01'W.), a low mushroom-shaped hill, rises from the coast 1.5 miles S of the cape.



Morro do Chapéu bearing 293° distant 31 miles

Outeiros dos Porcos, two remarkable knolls close to each other, lie about 3 miles S of Cabo Bacopari.

Vessels can anchor in Baía Formosa, about 0.4 mile off the village of Formosa, in depths of 7 to 9m, soft mud, sheltered from S and SE winds.

Ponta da Trincheira lies 19 miles SSE of Cabo Bacopari. Baía de Traicao indents the coast NNW of the point. A reef that uncovers lies close E of the point, and shows a light from the N end. The town of Traicao, which has two churches, the W of which stands on the summit of a hill, lies on the S shore of Baía de Traicao.

Anchorage may be obtained in the bay in a depth of 6m, but local knowledge is necessary.

Ponta de Lucena (6°54'S., 34°51'W.) is located 13.5 miles SSE of Ponta da Trincheira and is densely covered with a coconut grove. The point is not easily distinguished from the offing. A village with a conspicuous church is located W of the point. A light is shown from the point. About 2 miles to the E and NE of the point, the sea breaks over reefs and rocks. A wreck is visible S of the reefs.

Ponta de Santo Antonio, lying 4 miles S of Ponta de Lucena, rises to a hill. A conspicuous church lies on this hill, about 2 miles WNW of the point.

Baixo de Lucena extends up to 2.5 miles offshore between Ponta de Lucena and Ponta de Santo Antonio. Seas break over these shoals. A buoy marks the SE limit of these shoals.

Rio Paraiba

2.36 Rio Paraiba (6°58'2"S., 34°51'W.) rises in the Jabitaca Mountains and discharges between Ponta de Santo Antonio and Ponta de Mato, about 2 miles to the E. The town of Cabedelo stands to the W of Ponta de Mato.

Rio Paraiba is divided just within its mouth, into two forks by Ilha da Restinga. The E fork, Cabedelo Channel, leads to the berths at Cabedelo. The W fork is known as Canal do Porto Velho. The two channels reunite at Ponta do Galego, the S extremity of the island.

Extensive breakers indicate the entrance to the river. They are caused by the shoals extending E from Ponta de Lucena and by the shoals fronting the river mouth.

Pedra Seca (6°57'S., 34°49'W.), a reef from which a light is shown, lies S of the river entrance in a position about 0.7 mile NE of Ponta de Mato. From seaward it looks like a small boat under sail.

A shoal bank, contiguous with the reef and with depths of less than 2m, extends 0.7 mile NW from the light.

Cabedelo (6°58'S., 34°50'W.)

World Port Index No. 12710

2.37 Winds—Weather.—During the summer winds are generally from the NE and E. During the winter, they are from E to SW and are stronger than in the summer.

Tides—Currents.—The spring range is about 2.2m and the neap range is about 1m.

During the winter months of the SE trades, the currents set to the N or NW. During the summer months of the NE trades, the currents set to the S or SW. During SW winds, the current attains a rate of 5 to 6 knots at spring tides.

Depths—Limitations.—In 1991, the port was accessible to ships 210m long with a draft of 9m at LWN. It has been reported that dredging operations in progress will deepen the depth over the bar and alongside the wharf to 10m overall.

Pedra Nova is a rocky shoal with less than 1.8m. It lies on the N side of the entrance, about 2 miles NNW of Ponta de Mato.

Banco do Taboleiro, with a least depth of 1.2m, lies close S of the channel entrance. A lighted buoy marks its N extremity.

Coroa da Sororoca, having depths of less than 3m, extends up to 0.7 mile N and 1 mile NE of Ponta de Mato. Shoals extend about 1.25 miles N and 1 mile E from this point.

A detached 4.5m patch lies E of the entrance of the bar channel in a position about 0.7 mile N of the above lighthouse.

A detached 4m patch lies W of this patch. It is marked by a lighted buoy.

Banco da Restinga extends N and NNE from Ilha da Restinga. A lighted buoy marks the N extremity of this shoal.

A 5m patch lies close off the S end of the quay.

Aspect.—The river is approached through a gap in the barrier reef about 2 miles wide. Within this gap, the channel leading to the mouth of the river is narrowed by submerged rocks and sandbanks.

Ponta de Mato is covered with a dense growth of coconut palms and is the NE extremity of a spit, running N to S, that is about 0.7 mile wide from E to W. A breakwater, marked by a

light at its extremity, projects 0.1 mile N from Ponta do Molhe, the NW extremity of the spit. Two silver-colored tanks lie close E of the root of the breakwater.

A ruined fort lies close SE of the root of the breakwater. A conspicuous water tower stands about 1 mile SSE of the ruined fort. An obstruction light is shown from building close NE of the water tower.

The light tower on Pedra Seca frequently is obscured by numerous small craft in the vicinity.

Pilotage.—Pilotage is compulsory and must be requested at least 12 hours in advance; the pilot station is located about 2 miles NNE of Pedra Seca light. The pilot boards from a red launch with the letter "P" on each bow.

Anchorage.—Vessels awaiting pilot or tide anchor in 10 to 11m, about 2 miles NNE of Pedra Seca light. The inner anchorage, for vessels over 5,000 grt, lies about 0.5 mile SW of the head of the Ponta do Mol, in depths of 6 to 8m; swinging room is limited by the proximity of the 5.5m depth contour.

The quarantine anchorage, also designated for vessels of less than 5,000 grt, is 0.2 mile S of the S end of the quay, in depths of 5 to 6m, mud.

Caution.—A dangerous wreck, with a depth of 7m, lies 7 miles SSE of Ponta de Mato.

Cabedelo to Recife

2.38 From Cabedelo to Cabo Branco the coast consists of sandy beaches backed by low ground covered with bushes.

Cabo Branco (7°09'S., 34°48'W.), located about 12 miles S of Pedra Seca light, is a pronounced projection of the coast, rising in sheer cliffs to a dark-colored and level summit; it is visible at a distance of about 14 miles and is a good landmark.

A light is seen from the cape. A conspicuous yellow building is situated about 1 mile W of the light; a prominent yellow convent stands on the top of a hill about 1.2 miles S of the light.

Between Cabo Branco and Ponta de Pedras, about 30 miles to the S, the coast is mainly sandy beaches interrupted by perpendicular red cliffs. Reefs and rocks lie up to 3 miles offshore.

Ponta Tambaba is made up of brightly colored cliffs that slope steeply to the shore and is located 10.5 miles S of Cabo Branco. Barreiras de Tambaba, S of the point, are conspicuous red cliffs and the highest land in the vicinity.

Ponta Pitimbu (7°28'S., 34°48'W.), about 9 miles S of Ponta Tambaba, is a salient point covered with vegetation. The village of Pitimbu is located close S of the point.

Pitimbu Light is shown from the N end of a reef 0.5 mile E of Ponta Pitimbu.

Between Ponta dos Coqueiros, a salient point located about 3 miles S of Pitimbu, and Ponta de Pedras, the coast is slightly indented and intersected by Rio Goiana and Rio Megao. The village of Taquara is located about 2 miles W of Ponta dos Coqueiros.

Ponta de Pedras (7°38'S., 34°48'W.), from which a light is shown, is wooded and prominent. A village with a church lies close S of the point. The coastal reef extends about 3 miles seaward from the point.

Between Ponta de Pedras and Olinda, about 24 miles to the S, the coast is deeply indented. Ilha de Itamaraca, a large island, lies in the middle of this indenture.

Ilha de Itamaraca appears like a part of the coast from offshore.

Pilar, a village with a church, is located on the seaward side of the island, about 8 miles S of Ponta de Pedras. An old fort stands on the SE extremity of the island.

2.39 Barra de Catuama (7°43'S., 34°48'W.) is a passage through the barrier reef and shoals, which gives access to Rio Catauma, Rio Carrapicho, and Canal de Santa Cruz.

The entrance to all of which lie within 1 mile to the W of **Ponta do Funil** (7°41'S., 34°50'W.). The barrier reef on both sides of the entrance is submerged, and the entrance is narrowed by shoals lying off both ends of the reef.

Within the entrance a narrow channel with a minimum depth of 2.5m in the fairway leads to an anchorage off the mouth of Rio Catauma, which has a depth of 9m.

The bar should not be approached without the aid of local knowledge. Pilotage is mandatory.

Anchorage is afforded in depths of 13 to 14m, about 4 miles ESE of Ponta do Funil.

Barra da Ilha, the S entrance to Canal de Santa Cruz, is formed by a break in the barrier reef, 2 miles E of the SE extremity of Ilha de Itamaraca.

The minimum depth over the bar was 2.5m, and within the bar the depth increases to 7m, where vessels anchor off the old fort. The bar should not be approached without the aid of local knowledge.

Ponta de Janga is a low, salient point covered with palm trees. The village of Pau Amarelo and an old fort lie to the N of the point. Barra do Pau Amarelo lies close offshore from the point.

Ponta de Olinda (8°01'S., 34°51'W.), located 6 miles S of Ponta de Janga, rises to Morro do Serapiao, a hill from which a light is shown. The town of Olinda, located on the point and hill, is prominent from offshore. A vessel approaching the point will first sight Nossa Senhora do Monte church, close N of the town.

Close N of Ponta de Olinda two breakwaters parallel the coast about 0.3 mile to seaward. One is L-shaped and projects from the coast to the E and then turns NNE. The other is detached and extends NNE from close inshore from the head of the first. Development works on a partly submerged breakwater were reported in the vicinity.

Baixos de Olinda, which fringes Ponta de Olinda, consists of two lines of reefs, the outer of which Baixo Itabaicus, also known as Baixo Olinda de Fora, lies about 1 mile offshore.

The sea breaks on the inner reefs only and then mainly during strong winds. The S extremity of Baixo Itabaicus is marked by a lighted buoy.

Recife (8°03'S., 34°52'W.)

World Port Index No. 12730

2.40 The harbor entrance is located about 2 miles SSW of Ponta de Olinda. The harbor is formed by the barrier reef and

three breakwaters. The harbor is one of the largest and busiest on the NE coast of Brazil.

Winds—Weather

During the summer months, the winds are generally from the E and NE. During the winter, from March to August, the winds are from E to SW and blow with much more force.

Tides—Currents

The tidal range at springs is 2.1m and at neaps is 0.3m. High winds from seaward cause an additional rise up to 0.3m.

The tidal currents within the harbor attain velocities of 1 to 2 knots at springs; the ebb current is always the stronger.

Depths—Limitations

Canal de Olinda and Canal do Sul are the two approaches to the port of Recife.

Canal de Olinda, the N approach to the port, should not be used by vessels having a draft of more than 4.5m. A 4.3m patch lies 0.2 mile E of the N end of the detached breakwater.

Canal do Sul, the S approach to the port, is the main access route to Recife. It lies S and W of the breakwater built on Banco Ingles. Canal do Sul has charted depths of about 7.3 to 12.8m. Vessels drawing over 9m regularly use the port.

The channel W of the detached breakwater has a minimum depth of 10m over a width of 0.15 mile at high tide. The entrance channel has dredged depths of 6.9 to 8.5m between the breakwaters. A submarine pipeline lies in the vicinity of the N part of the harbor.

The harbor has about 3 miles of quays. Berths are numbered from N to S. No. 1 berth is used by tankers. No. 2 berth is used by large vessels loading sugar, and No. 3 berth is used by large passenger vessels. The depths alongside the docks vary from 6.5 to 10m at berths. Berths 1 to 5 have a dredged depth of 8.5m alongside; berths 6 to 15 have a dredged depth of 6.5m alongside.

Vessels drawing over 8.8m must use tugs. Vessels are required to use their own fenders.

Banco Victor Pisani lies with its least depth of 7.5m about 1.3 miles E of the head of the S breakwater. The bank is the S limit of depths of less than 9.1m which lie to the S of Baixo Itabaicus.

A dangerous wreck lies close to the SE edge of Banco Victor Pisani. A lighted buoy is moored close E of the wreck.

A shoal, with a least depth of 7.1m, lies about 1.7 miles E of Recife Light Tower.

Banco Ingles, with a least depth of 3.2m, lies with its center about 0.5 mile ESE of the head of the S breakwater. The bank, with depths of less than 5.5m, is about 0.5 mile long, N and S, and about 0.3 mile wide. With SE winds the sea breaks heavily on Banco Ingles.

A breakwater leads across Banco Ingles. Lights are shown from the N and SSW ends of the breakwater. A lighted buoy is moored off the W side of the middle of the breakwater.

Banco Ituba, with a least depth of 6.8m, sand and coral, lies about 2.7 miles SSE of the head of the S breakwater. The minimum depths are over the S side of the bank.

Banco Tacis, with depths of 2.2 to 5.5m, lies with its N edge about 1.2 miles S of Recife Lighted Tower. The bank extends about 1 mile S and joins Banco dos Afogados. Banco Tacis, with its outer edge about 0.7 mile offshore, parallels the reef which fringes the shore.

Banco dos Afogados is a continuation of Banco Tacis to the S; it has least depths of less than 1.4m and lies with its outer edge nearly 1 mile offshore in a position about 3.2 miles S of Recife Lighted Tower.

Cabeca de Coco, a rock which breaks at LW, lies about 0.9 mile NNE of the head of the N breakwater.

Baixo Salgadinho, a shoal with a least depth of 0.8m, lies about 0.5 mile NNE of the head of the N breakwater. Shoals with depths of 2.2 to 4.4m lie from 1.25 to 1.5 miles NE of the head of the same breakwater.

A 5.5m patch lies about 1 mile SSE of Recife Lighted Tower.

Sunken rocks, with depths of less than 1.8m, extend about 91m ESE from the head of the N breakwater. Scattered patches, with depths of 9.1 to 11m, lie outside the 11m curve; the chart is the best guide for locating these.

Aspect

The best landmarks for a vessel approaching from the N are Morro do Serapiao, with Olinda Lighted tower standing on it. Two gray chimneys lie 1.5 and 2 miles SW, respectively, of the Olinda Lighted tower. Three conspicuous radio towers lie 3 miles SW of Olinda Lighted tower.

For a vessel approaching from the S, the best landmarks are the lighthouse on Cabo de Santo Agostinho, situated 18 miles SW of the harbor entrance and Serra Selada, a saddle-shaped mountain 310m high, located 16 miles WSW of Cabo de Santo Agostinho.

A conspicuous church with twin steeples and a conspicuous gray chimney lie 6 miles and 3 miles, respectively, SW of the harbor entrance.

The harbor entrance lies between two breakwaters. On the W side, Mohle de Olinda, 0.2 mile long, extends NW to the shore.

On the E side, the barrier reef and the breakwater which extends it stretch 2 miles SSW, enclosing the harbor. A masonry wall has been built on top of the barrier reef.

Lights are shown from the seaward end of each breakwater. A lighthouse lies about 0.6 mile SSW of the end of the E breakwater, but is difficult to distinguish during daylight hours if white-hulled vessels are tied up at the quays.

A detached breakwater, lying in a general N to S direction, has been built about 0.5 mile E of the harbor entrance. Lights are shown from each end of the breakwater.

Pilotage

Pilotage is compulsory. Pilots board from a red launch with a black "P" on each bow.

Vessels await pilots S of Banco Ingles breakwater. Vessels can await pilots either 1 mile SSE or 0.5 mile NE of the detached breakwater.

Vessels drawing less than 7.6m may enter and leave port any time of the day.

Vessels with a greater draft should arrive at the pilot boarding position in daylight about one hour before HW so they can enter the harbor and moor during slack water.

Permission may be granted for ships up to 9.4m draft to sail at night during HW.

Anchorage

Ships anchor in depths of 9.1 to 12m, 0.3 mile S of the S end of Banco Ingles breakwater, sand, with good holding ground. Vessels can also anchor between Banco Ingles breakwater and S breakwater in depths of 9 to 10m.

Anchorage is prohibited in the cable areas indicated on the charts.

Caution

A shoal, with a depth of 7m, lies 0.3 mile E of the S end of the detached breakwater.

Mariners are warned that the channels within the port of Recife are subject to frequent change and shallowest depths may exist.

Recife to Maceio

2.41 Between Recife and Cabo de Santo Agostinho, about 19 miles to the SSW, the coast is low and covered with palm groves. Above-water and sunken reefs and rocks fringe and parallel this part of the coast to distances of 2 miles offshore.

Nossa Senhora dos Prazeres (8°09'S., 34°56'W.), a church with two towers, is located about 7 miles SSW of Recife Lighted Tower. The church is about 2 miles inland of the coast and prominent from offshore.

Barra das Jangadas, about 12 miles SSW of Recife Lighted Tower, is the common entrance to Rio Jaboatao and the Rio Pirapama. The rivers are narrow with strong currents and are of little importance to navigation.

Ponta das Pedras Pretas (7°38'S., 34°48'W.), about 4 miles S of Barra das Jangadas, is fringed by black rocks which are very conspicuous from offshore. A rocky shoal extends for nearly 1 mile E from Punta das Pedras Pretas.

Isolated shoals, one with a depth of 5.5m, lie up to 2 miles off the coast between Ponta das Pedras Pretas and Cabo de Santo Agostinho.

Cabo de Santo Agostinho (8°21'S., 34°56'W.), from which a light is shown, is a rugged projecting promontory of moderate height and is located about 19 miles SSW of the entrance to Recife. The cape is a good landmark and in clear weather is visible about 24 miles. A church stands close to the light and an old fort is located on the S side of the cape. A dangerous wreck is charted close E of the cape.

From Cabo de Santo Agostinho to Ponta dos Ilhetas, about 28 miles to the SSW, the coast continues low and sandy and is covered with vegetation.

2.42 Suape (8°24'S., 34°58'W.), a new port constructed 3 miles S of Cabo de Santo Agostinho, is protected by a breakwater. The breakwater extends 0.5 mile ESE from the coast, then turns ENE and NNE for 0.5 mile and 0.4 mile, respectively. The petroleum pier allows for simultaneous

operation of two vessels of up to 30,000 dwt with a depth of 12.8m.

The industrial quay allows berthing of vessels up to 80,000 dwt at the E side with a minimum depth of 15m.

The W side berths vessels up to 15,000 dwt in a depth of 10m.

The largest vessel handled at this port is 190m in length with a draft of 13m. The approach channel has a width of 390m and depths of 17m outside the breakwater and 15m inside. The turning basin is 600m in diameter with a depth of 16m.

Pilotage.—Pilot is compulsory. Pilots, who come from Recife, board 0.3 mile N of the breakwater head and require 24 hours advance notice. There is no night pilotage.

Anchorage is available 1 mile NE of the breakwater head in depths of 15 to 17m, sand, but is very exposed.

Caution.—A rock, with a depth of 11.5m, lies about 0.3 mile E of the head of the breakwater.

Pontal do Cupe, about 7 miles SSW of Cabo de Santo Agostinho, is a small salient point surrounded by a reef. A village marks the point. The town of Porto de Galinhas is located near the shore about 3 miles SSW of Pontal do Cupe.

2.43 Pedra Selada (8°25'S., 35°12'W.), 311m high, is part of the prominent Serra Selada range, and is located 16 miles WSW of Cabo de Santo Agostinho. In clear weather it is visible for better than 20 miles.

It is saddle-shaped and is an excellent landmark, being the first land to be sighted by a vessel approaching from the E. However, it is frequently covered by haze, especially in the morning, when the land breeze is blowing.

Ilha de Santo Aleixo (8°37'S., 35°02'W.) is located about 10 miles SSW of Pontal do Cupe. The seaward side of the island is low and almost barren. Two hills, the higher one being 23m high, mark the S side of the island.

A submerged reef extends to the SW from the SE side of the island for a distance of about 0.5 mile and is marked by several above-water rocks on which the sea always breaks.

A rocky shelf off the W extremity of the island is separated from the coastal reef by a channel with a depth of 5.5m.

Anchorage.—Small vessels can anchor in 6 to 7m mud, off the beach on the W side of the island. Larger vessels can anchor in 10 to 12m, adjacent to the sunken ledge of reefs off the S side of the island. Local knowledge is required when anchoring in this area.

Rio Formoso (8°42'S., 35°05'W.) discharges about 6 miles SSW of Ilha de Santo Aleixo. A conspicuous church stands on the N side of the river mouth. Local knowledge is required for small vessels to enter the river.

Ponta Tamandare, lying 3.5 miles SSW of the entrance to Rio Formoso, is low and sandy. A light is shown from the point.

2.44 Baía de Tamandare (8°46'S., 35°06'W.) is entered between Ponta Tamandare and Ponta das Ilhetas, 2.25 miles to the SSW. The village of Tamandare stands on the beach on the N side of the bay.

A light is shown from Forte de Santo Inacio located near the village. The bay can be identified by the fort with the Lighted tower and the buildings of a school.

The barrier reef, which generally dries in the vicinity of the bay, has three gaps in it.

Barra de Tamandare, the main entrance, is about 0.5 mile wide and has a minimum depth of 7.6m in the fairway, but depths of less than 5m extend up to 0.15 mile from either side.

This entrance is obstructed by Baixa Grande, with a least depth of 3.4m and Baixinha, a group of shoals with a least depth of less than 2m. Two ledges with depths of 3.5 and 4.0m lie in mid-channel S of Baixinha.

The barrier reef on the N side of this entrance terminates in Ilha do Barra, a coral formation which occasionally covers.

Anchorage may be obtained, close to the beach, off a pier at the N end of the bay, in depths of 6 to 7m, dark mud and sand, good holding ground. This anchorage is well sheltered except during SE winds which raise a sea inside the bay.

2.45 From Baía de Tamandare to Porto de Pedras, about 25 miles SSW of the bay, the shoreline is low and sandy. Hills commence to rise a few miles inland. Between the hills, the valley in which the Rio Una flows can be identified from offshore. The coastal reef, uncovered and broken in places, parallels this coast to a distance of about 0.7 mile to 2.5 miles offshore. Sand banks and foul ground lie between the reef and the coast.

The Rio Una discharges into the sea about 3 miles SSW of Ponta das Ilhetas. Caixao do Una, a break in the coastal reef about 2 miles wide, lies off the mouth of Rio Una. This bar has a depth of 9.8m and leads to a small anchorage to the N, which has a depth of 7.4 to 9.0m, mud.

The anchorage affords some shelter from NE winds to small vessels. Local knowledge is essential.

From Ponta de Gravata, 2 miles S of Rio Una, to Pontal do Antunes, about 7 miles further SSW, the coast is uniform. A village stands on the coast about 2 miles SSW of Ponta de Gravata. The Rio Persinunga discharges about 1 mile SSW of the village. A church stands about 0.5 mile S of the mouth of the river.

Barra Grande (8°59'S., 35°11'W.), a break in the coastal reef about 150m wide, has depths of 5.8m in the center of the channel. There are two anchorages for small craft, one to the N of the bar and one to the S. Local knowledge is essential.

About 3 miles SW of Barra Grande and near the shore, the town of Maragogi can be seen. A church stands about 3 miles SSW of the town and is prominent from offshore.

2.46 Porto de Pedras (9°09'S., 35°18'W.) is located on the S bank of Rio Manguaba, near its mouth, 9.5 miles SW of Maragogi. A light is shown from high ground on the S bank of the river mouth, close to a prominent church.

Anchorage for small craft is afforded in 3.6m, between the extremity of the barrier reef and the inner line of reefs which restrict the port area. Local knowledge is required. From Porto de Pedras to Ponta Verde, 39 miles to the SW, the shoreline is mostly low and sandy.

The Serra Mariquita, a low range of hills, rises about 18 miles W of Porto de Pedras. The coastal reef and the rocky shelf, which fronts it, continue to parallel the coast and lie at distances of less than about 1 mile to nearly 2 miles from the shore. The reef is uncovered and broken in many places.

Barra do Camaragibe (9°20'S., 35°24'W.), nearly 1 mile wide between sunken reefs, lies off the mouth of the Rio Camaragibe, 12.5 miles SW of Porto de Pedras. Depths inside the bar range from 6 to 7.9m. A reef encumbers the N part of the harbor.

Sheltered anchorage is afforded small craft with local knowledge.

Ponta do Prego (9°32'S., 35°35'W.), low, prominent, and covered with trees, is located about 17 miles SW of Barra do Camaragibe. A village stands near the shore about 1 mile W of the point. A depth of 8.8m lies about 3 miles SE of Ponta do Prego.

Ponta Verde (9°40'S., 35°41'W.), the NE point of Porto de Maceio, is a prominent low salient point with some conspicuous buildings. A light is shown from Recife da Ponta Verde, the reef which extends from and encircles the point to a distance of about 0.7 mile. The sea breaks over the reefs in the vicinity of Ponta Verde.

Porto de Maceio (9°40'S., 35°44'W.)

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2.47 The port of Maceio lies in an open bay on the SW side of Ponta Verde. It is the only port for large vessels between Recife and Salvador. The city of Maceio and the town of Jaragua front the wide beach of the bay which comprises the harbor. Maceio Light stands on a high hill, about 0.7 mile N of Jaragua.

Winds—Weather.—During the summer months, the prevailing winds are from the NE during the day and from NW at night. At this time of the year the bay is generally calm and considered safe. During the winter months the wind is generally from the SE and SW and heavy swells enter the bay.

Tides—Currents.—The maximum range of tides is reported to be 2.6m.

Off Maceio, the Brazil Current has been observed setting parallel with the coast at a rate of 3 knots. During the winter months the head of the breakwater should be given a wide berth because the waters of the lagoons discharge into the W part of the bay and then set to the E. Throughout the year the coastal current sets to the SW.

Depths—Limitations.—In the middle of the bay W of the head of the breakwater there are depths of 9.1m decreasing to the N to 5.5m about 0.3 mile from the shore. A least depth of 9.1m is found in the harbor area, N of the breakwater.

Baixio do Peixe-Pau, nearly 0.5 mile in extent and with a least depth of 3.6m, lies with its SW edge about 0.7 mile SSW of the elbow of the breakwater. The sea breaks over this danger with strong S winds.

Rocky patches, with a least depth of 5.9m, lie about 1.2 miles ESE of the elbow of the breakwater. A patch, with a depth of 8m lies about 1 mile SE of the elbow. Another rocky patch, with a least depth of 6.7m, lies about 1 mile SW of the same position. Enseada de Pajucara, lying between Ponta Verde and the breakwater 2 miles to the SW, is completely obstructed by reefs.

A breakwater extends about 0.5 mile SSW from the W point of Enseada de Pajucara, along the W side of the reefs, and then turns WNW for 0.4 mile.

On the W side of the inshore part of the breakwater there is a reclaimed area 0.2 mile wide, on which there are molasses storage tanks and sugar warehouses.

The outer leg of the breakwater is reported to be quayed on its inner side.

The general cargo berth located on the inner side of the breakwater is 500m long with a depth of 10m alongside.

The sugar and molasses berth is parallel to, and 0.2 mile NE of, the general cargo berth. The berth is 250m long and with a depth of 10m alongside.

Salgema Terminal (Maceio Maritime Terminal), an L-shaped chemical pier, projects about 0.6 mile SE from the shoreline, about 1.7 miles WSW of the general cargo berth.

A detached breakwater, 0.2 mile long, lies close seaward of the pierhead and parallel with the coast.

There is a berth, on the inshore side of the pierhead, with a depth of 9.3m alongside. A vessel with a length of 132m and a draft of 7.8m can berth alongside.

Aspect.—The most conspicuous object in the port is a silo situated 0.6 mile N of the root of the breakwater. It appears on the horizon when Ponta de Prego is abaft of abeam.

A large shed and a tower marked with red obstruction lights, lie 0.3 mile and 1.5 miles NW, respectively of the root of the breakwater. A prominent water tower lies 4 miles SW of the root of the breakwater. A tank farm lies at the root of the chemical pier.

Pilotage.—Pilotage is compulsory for all foreign vessels and is available 24 hours. Berthing of tankers is restricted to daylight hours only. Send ETA 24 hours in advance.

If the ETA falls on a Saturday or Sunday, messages must arrive by the preceding Friday. Requests for a pilot, together with the vessel's ETA, should be forwarded at least 12 hours in advance through Olinda (PPO) or Salvador (PPA). The pilot boards about 0.4 mile SW of the Baixo do Peixe-Pau Lighted Buoy.

Regulations.—The maximum vessel speed permitted between the pilot pick-up point and the port is 6 knots.

Anchorage.—Vessels less than 3,000 grt can anchor in 6 to 7m about 0.5 mile WNW to W of the head of the breakwater.

Vessels greater than 3,000 grt can anchor in charted depths of 9.2 to 14.5m in an area, best seen on the chart, lying SW of the head of the breakwater.

Vessels awaiting the pilot can anchor in 13m, W of Baixo do Peixe-Pau Lighted Buoy.

Vessels waiting to use Salgema Terminal anchor in an area, best seen on the chart, lying about 2 miles SE of the head of the terminal pier, in charted depths of 14.9 to 16.8m.

Caution.—Fishing vessel concentrations may be encountered up to 20 miles from the coast.

Maceio to Aracaju

2.48 From Maceio to the mouth of the **Rio Sao Francisco do Norte** (10°31'S., 36°23'W.), about 64 miles to the SW, the shoreline for the most part, continues low and sandy. The coast is marked by red cliffs and hills in several places.

Along this stretch of coast the coastal reef, above-water and sunken, parallels the shore to distances of 2.5 miles offshore in places. Sunken rocks fringe various parts of the coast to a



Porto do Maceio

distance of 1 mile, and depths of less than 3.6m lie as far as 6 miles offshore.

Porto Frances (9°46'S., 35°50'W.), located on the coast about 10 miles SW of Maceio light, is marked by white sand dunes. The coastal reef off Porto Frances uncovers and skirts the coast at a distance of about 0.5 mile. The coast between here and the mouth of Rio Sao Miguel rises to high hills and is covered with vegetation.

Barra de Sao Miguel lies off the mouth of Rio Sao Miguel, located about 6 miles SW of Porto Frances. A light is shown from the S side of the river mouth. A reef, the N extremity of which dries occasionally, begins 1 mile E of the S entrance point of Rio Sao Miguel and extends SW for 2 miles.

Small vessels, with local knowledge, may obtain anchorage between the reef and the coast in depths of 3 to 4m and also inside the reef off the river mouth near Cidade de Santana, which stands on the N bank of the river close to its mouth.

From the mouth of the Rio Sao Miguel to Pontal de Coruripe, about 22 miles SW, high red cliffs dominate the N part of the coast. Further SW the coast becomes lower and several lakes are formed.

Lajes dos Baixos, a sunken rocky ledge, lies about 1 mile from the shore. Depths of 9.1m and less lie to a distance of 2.5 miles off shore and depths of 20.1m and less lie about 6 miles from this coast.

Pontal de Coruripe (10°10'S., 36°08'W.), from which a light is shown, forms into a small bay open to the SW. The village of Coruripe stands on the point.

Pontal do Peba (10°22'S., 36°17'W.), about 15 miles SW of Pontal de Coruripe, is conspicuous from offshore because vegetation ceases in the vicinity of the point.

The village of Peba stands on the point which is fringed by numerous uncovered reefs for a distance of 1 mile. An open anchorage for small craft lies N of the reefs.

Sergipe Terminal (10°51'S., 36°55'W.) is a T-shaped pier, situated 1.5 miles SE of Sergipe Light. The unlit buoyed channel leading to the terminal are privately maintained; changes are not announced by Notice to Mariners.

Rio Sao Francisco do Norte

2.49 The mouth of **Rio Sao Francisco do Norte** (10°31'S., 36°23'W.) is located about 12 miles SW of Pontal do Peba. The river is one of the largest and most torrential in Brazil. From its source in the mountains, the river flows about 1,700 miles to the sea. Small vessels navigate the river for about 150 miles above its mouth to the village of Piranhas.

The channel leading into the river lies between sandbanks which extend 2 miles off both entrance points and on which the sea always breaks. Vessels with local knowledge can cross the bar. There were charted depths of 1.5 to 2.4m on the bar. Both the sandbanks and the bar are subject to continual change, especially during the high river season.

Anchorage may be obtained S of the bar in depths of about 9m. The anchorage is exposed to prevailing winds.

Pilots for the river are embarked at Maceio. Previous notice of a vessels expected time of arrival should be sent to Penedo, the principal town on the river.

A drying wreck lies on the edge of a sandspit, about 2 miles SSW of Ponta Cabeco, the S entrance point of the river.

From the mouth of Rio Sao Francisco do Norte to the mouth of Rio Sergipe, the entrance to Porto de Aracaju, 46 miles to the SW, the coast is formed by Praia de Santa Isabel, a white sandy beach backed by hills covered with vegetation.

A lighted platform stands about 17 miles SW of Rio Sao Francisco do Norte light. Depths of 6.3 and 5.1m lie 2.5 miles E and 2 miles ESE, respectively, of the platform. A depth of 5.5m was reported to lie 1.5 miles E of the platform.

Sailing craft should use caution along this part of coast because of the strong prevailing winds and currents, which tend to set them on shore. The current sets to the S with velocity of 1.5 to 3 knots.

Porto de Aracaju (10°55'S., 37°03'W.)

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2.50 Porto de Aracaju stands 3 miles within the mouth of Rio Sergipe, which is navigable as far as Cidade de Riachuelo, 20 miles up river.

Winds—Weather.—From September to February the winds are from the N quadrants and from the S quadrants from March to August. The S winds send in a heavy sea, and make crossing the bar difficult if not impossible.

Tides—Currents.—The spring range is 1.9m and the neap range is 0.9m. During ebb tide the current reaches a maximum velocity of about 2 knots.

Off the mouth of the river the flood current sets S and the ebb current sets N. During the ebb the sea on the bar is generally higher than during the flood.

Depths—Limitations.—The mouth of Rio Sergipe is 0.75 mile wide between its entrance points, but is obstructed by sandbanks leaving only a narrow channel on the S side. This channel does not change position but its width varies, and should never be entered without local knowledge.

Banco Norte and Banco Sul, on which the sea always breaks, extend 2 miles SE and 1.5 miles ESE from the N and S entrance points of the river, respectively.

The channel is approached across a bar between the extremities of these two sandbanks. Depths over the bar are subject to frequent changes and the buoys are moved as necessary. There is a depth of 4m at the bar.

There is a concrete wharf, 96m long with depths alongside of 6 to 7m.

There is a dolphin berth for tankers, with four mooring buoys close S, on the W bank of the river.

Crude Oil Offshore Loading Berth (11°01'S., 37°01'W.) is located about 4.5 miles SSE Aracaju Light. Six mooring buoys are situated around the terminal. A berthing master is provided to assist ships berthing; ships are normally berthed during daylight hours. There are no tugs. The berth can accommodate a ship of 65,000 dwt (in good conditions up to 75,000 dwt). Ships can load to a draft of 15m. A ship waiting to berth should anchor 1.5 miles SE of the berth, in a depth of 24m, mud and fine sand.

Guaricema Offshore Loading Berth (11°09'S., 37°04'W.), consisting of six offshore platforms and a berth between four mooring buoys, connected to shore by a submerged pipeline,

lies 6 miles E of the Rio Vaza-Barris. Each platform has a tower with an orange daymark indicated by a number in black, also a fixed red light and a flashing white light is shown from the tower.

Aspect.—The city can be identified by Morro do Urubu, over 90m high, and by a conspicuous twin towered church standing on a hill 1 mile S of Morro do Urubu.

Prominent objects at the mouth of the river include the Aracaju lighthouse and a flare stack close NW.

Pilotage.—Pilotage is compulsory for vessels greater than 500 grt and must be requested 24 hours in advance. When approaching the buoys at the entrance to the channel, vessels shall indicate their draft by the International Code of Signals, and if ordered by the signal station to await a greater depth on the bar, they should heave-to in the vicinity of the buoys at the channel entrance.

Pilots board near the channel entrance buoys. Vessels may enter or leave the port only during daylight hours.

In bad weather, vessels are directed across the bar by signals made by the pilot from their boat and repeated by the signal station. The signal station is located about 0.7 mile S of Aracaju Light.

Anchorage.—In calm weather, vessels can anchor NE of the bar in depths of 7 to 12m, fine sand and mud.

Within the river, sheltered anchorage is afforded in depths of 10 to 12m off the city. Ships should not anchor S of the channel across the bar due to submarine oil pipelines.

Caution.—From an onshore oil terminal (**Carmopolis**) 3 miles SW of the Aracaju Light (10°58'S., 37°02'W.) submarine oil pipelines are laid to groups of offshore oil platforms situated 6 miles ENE, 9 miles E, and 10 miles S of the oil terminal.

Ships should not anchor, and are advised to avoid navigating within the area between a line joining these two groups of platforms.

2.51 Barra de Sao Cristovao (11°11'S., 37°08'W.), located at the mouth of the Rio Vaza-Barris (Yasa or Vasa) and identified by the Morro dos Tres Irmaos, lies 15 miles SW of Pontal do Propria. The river entrance is obstructed by sandbanks but small craft with local knowledge can navigate the narrow channel. The N entrance point is marked by a light.

Strong winds raise a sea over the bar and sandbanks off the mouth of the river. The anchorage off the bar has little shelter and poor holding ground. The current off the river entrance sets S during flood tide.

Barra da Estancia (11°27'S., 37°21'W.) is located about 21 miles SSW of Barra de Sao Christoavo, and is part of the common mouth of the Rio Real and the Rio Piaui. A light is shown from a point of land close to the N side of the bar.

Some houses stand on shore on the S side of the river's entrance near the extremity of Mangue Seco.

Breakers on the bar and sandbanks which obstruct the river mouth, are visible at a distance of about 4 miles.

A narrow channel, navigable by ships with drafts of 3m, leads across the bar.

The channel across the bar is reported to be marked by unlighted buoys. Pilot service is available from Aracaju.

Pilots navigate the river as far as Crasto, 32 miles from the bar.

2.52 Rio Itapicuru (11°44'S., 37°31'W.) is located about 20 miles SSW of the mouth of the Rio Real. The mouth of the river is obstructed by sandbanks on which the sea almost always breaks.

The town of Conde, with a conspicuous church, lies on the S bank of the river, about 9 miles within its entrance. Small craft with local knowledge use the river.

The Rio Itariri and the Rio Inhambupe discharge about 15 and 23 miles SSW, respectively, of the mouth of the Rio Itapicuru.

Between the mouths of these two rivers, low hills, 2 to 3 miles inland, are visible 15 to 20 miles offshore. A light is shown from the mouth of the Rio Itariri.

Outeiro Pelador, a prominent hill, is located about 19 miles SW of the mouth of the Rio Inhambupe.

Large patches of white sand on the hill are conspicuous and can be seen up to 18 miles offshore.

Ponta Acu da Torre (12°34'S., 38°00'W.), 17 miles SW of Outeiro Pelador, is a low point where the coast turns and trends SW to Ponta Itapua. Garcia d'Avila Light is shown from the point.

Monte Gordo, a large hill, rises prominently 5.5 miles SW of Ponta Acu da Torre.

The Rio Jacuipe and the Rio Joanes discharge 11 and 24 miles, respectively, SW of Ponta Acu da Torre.

Between the mouths of these rivers a series of small tree-covered hills back the low shore.

A lighted tower and a conspicuous chimney stand 7.5 miles SW of Rio Jacuipe.

Ponta Itapua (12°57'S., 38°22'W.), from which a light is shown, is located about 7 miles SW of the mouth of Rio Joanes. A conspicuous building, illuminated at night, is located close NW of the light on the point. An aviation light is shown from a position 1 mile inland of the coast and nearly 4.5 miles NE of Itapua light.

Ponta Itapuazinho (13°01'S., 38°29'W.) is located about 8 miles WSW of Ponta Itapua. From the point to Ponta de Santo Antonio (see paragraph 3.2), nearly 4 miles to the W, the coast is rocky and reef fringed.

Sunken rocks extend about 0.2 mile from the shore in many places, namely around Ponta Itapuazinho and just to the W of Ponta do Concelho, located about 1 mile to the W of Ponta Itapuazinho.

A submarine pipeline is laid in a position 1.25 miles S of a point 1.25 miles W of Ponta Itapuazinho. Anchorage is prohibited.